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1. Howell, T.H.; Harth, J.A.P., and Dietrich, M.: Practitioner *173*:172.
*T.M. Reg. U.S. Pat. Off. for chlorpromazine, S.K.F.

Calendar of Meetings

ASSOCIATION OF AMERICAN MEDICAL COLLEGES 67th Annual Meeting, November 12-14, 1956 Broadmoor Hotel, Colorado Springs, Colo.

Conference of International Union for Health Education of the Public—April 27-May 5; Rome, Italy.

Congress of the International Society of Hematology—August 27-September 1; Hotel Somerset, Boston, Mass.

Congress of Latin Society of Ophthalmology—April 24-28; Madrid, Spain.

European Congress of Cardiology—Sept. 10-14; Stockholm, Sweden.

Inter-American Congress of Cardiology—November 4-10; Havana, Cuba.

International Academy of Pathology—April 24-25; Cincinnati, O.

Pan American Congress of Ophthalmology—January 9-14; Santiago, Chile.

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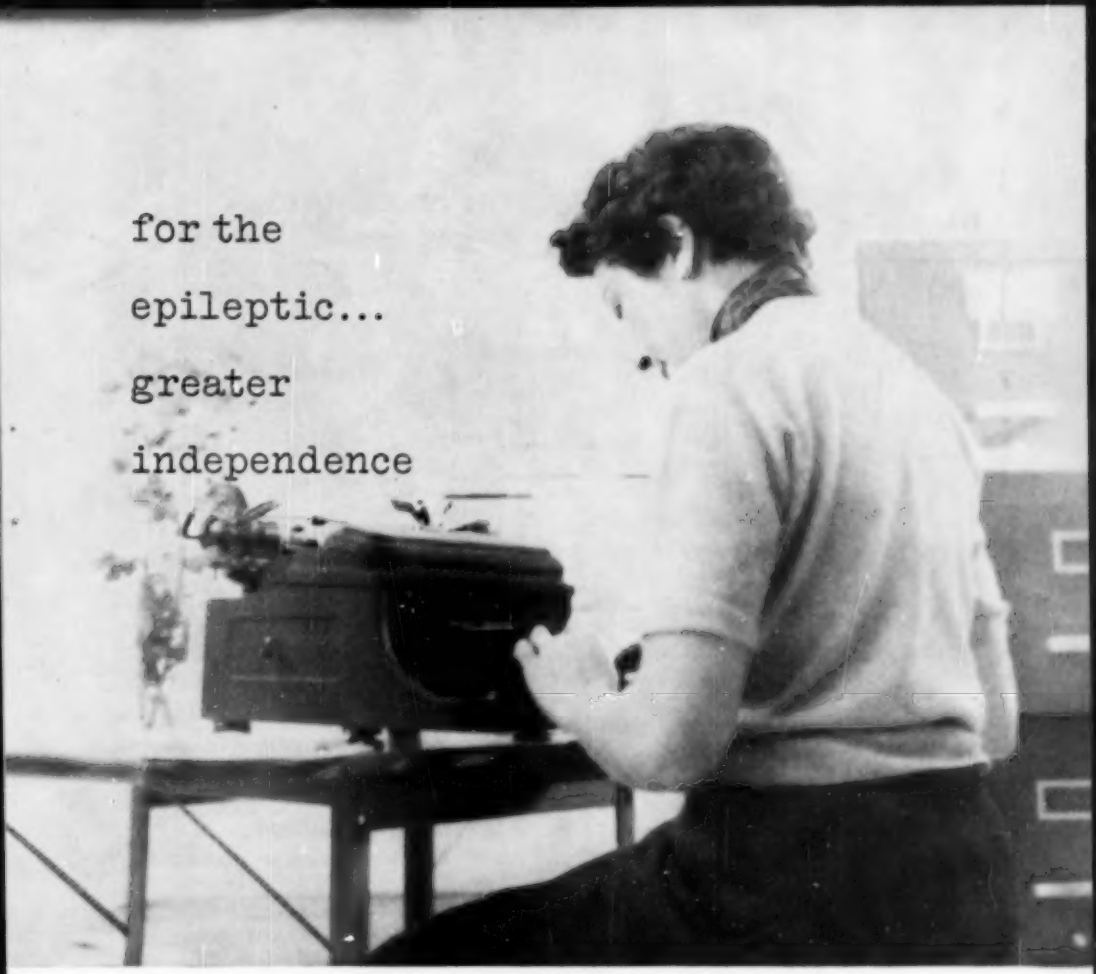

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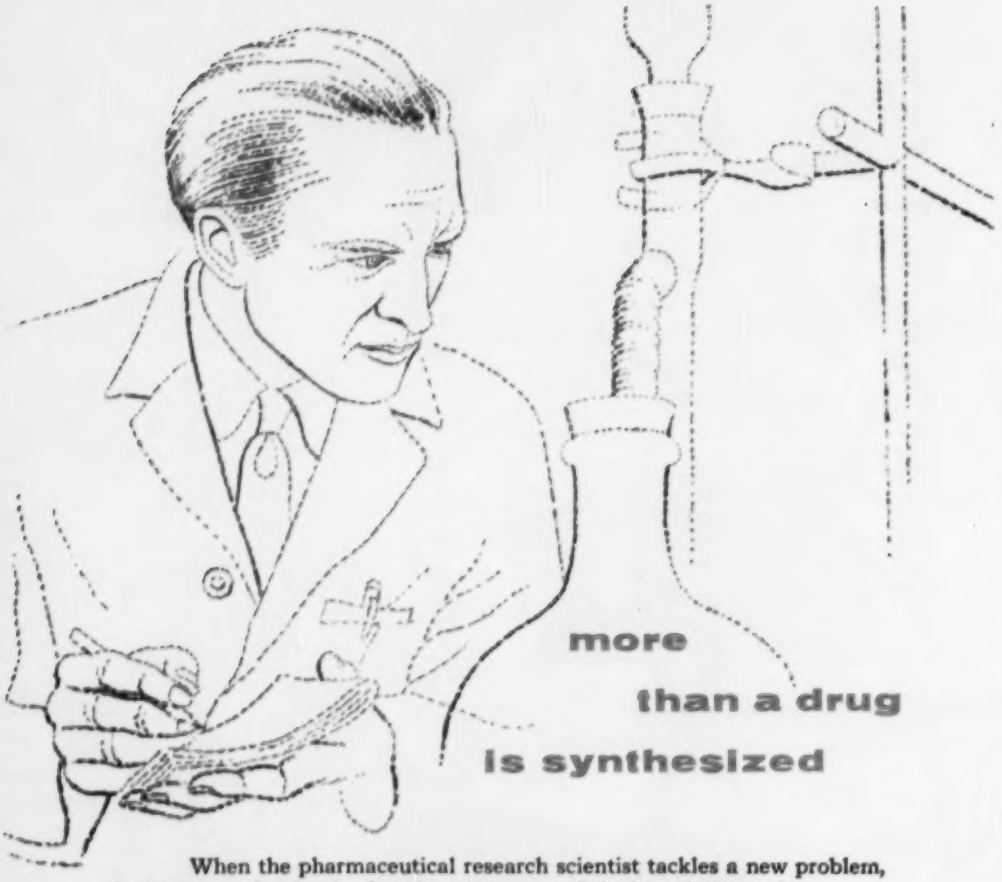

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Symposium on the Medical Student

Introduction

ROBERT J. GLASER, *Guest Editor*

IT IS OF INTEREST to note that nowhere in the 800 pages which comprise the "Proceedings of the First World Conference on Medical Education"[1] is the *raison d'etre* or, as Deitrick and Berson[2] put it, "the central figure" of medical education—the medical student—dealt with directly. It is, of course, true that the student is considered tangentially throughout the book, for there are chapters dealing with the selection of the medical student for admission, with the methods to be used in his instruction and with the subject matter to be supplied. Nonetheless, problems of the medical student *per se*—his adaptation to the rigors of his course, and the organization of facilities which play important roles in his four years as an undergraduate medical student —are not considered.

Perhaps these topics were omitted advisedly at a conference attended by medical educators from many countries, for there are a number of differences in the make-up of student bodies in the medical schools of various countries, and it can be assumed, therefore, that the nature of some of the student problems are not comparable in all countries. For example, continental schools usually admit very large classes with the knowledge that a considerable number will not finish; this philosophy is not in vogue in the United States, where, in contrast, most schools select students as carefully as possible with a view toward graduating all or almost all of them. With relatively small classes an entirely different student-teacher relationship exists, a fact which in itself both solves and creates problems. In any case, it is hoped that the papers which comprise this symposium will constitute a contribution in terms of focusing on certain aspects of medical school activity which have an important bearing on the student, his performance and achievements as he pursues his work for the degree of doctor of medicine.

The importance to the school and the student body of an effective health service and an adequate psychiatric facility are obvious; Dr. Clayton Loosli and Dr. George Saslow, who have contributed respectively the papers dealing with these topics, have each had a wide experience which qualifies him to cover his topic. The organization of a student adviser system, an important instrument in terms of student adaptation and development, is discussed by Dr. Glen Leymaster, who has been actively interested in this subject. Participation by students in research serves several

Dr. Glaser, our guest editor, is associate dean and assistant professor of medicine, Washington University School of Medicine.

aims; it opens up the vista of investigative medicine to a certain number of students, some of whom go on into academic careers, and it helps develop the critical approach which to any physician is invaluable. There are an impressive number of medical students who now do productive original work in addition to carrying their regular academic load, and Dr. Claude Villee reviews the student research program as it operates at Harvard.

In a symposium devoted to the student, it seemed only proper to invite student representation, and Rolla Hill Jr., has summarized many of the attitudes of his fellows. Since this general aspect has been of special interest to me, I have included a brief discussion concerning the adaptation of the medical student. Finally, Dr. John Ellis of the London Hospital Medical School, who recently visited a number of our institutions under the auspices of the Rockefeller Foundation, has been good enough to provide an appraisal of our students as he saw them, and has compared them, in a number of areas, with their English counterparts.

The organization and selection of subjects for this symposium was arbitrary, for within the limits of space it was obviously impossible to cover all the pertinent fields. If the symposium has any merit, credit belongs to those who were willing to collaborate.

REFERENCES

1. Proceedings of the First World Conference on Medical Education, London, Oxford University Press, 1954.

2. Deitrick, J. D., and Berson, R. C.: "Medical Schools in the United States at Mid-Century," New York, McGraw-Hill Book Company, Inc., 1953.

The Adaptation of the Student to Medical School

ROBERT J. GLASER

THOSE CONCERNED WITH medical education are well aware that the student entering medical school undertakes a task which is demanding intellectually, physically and emotionally. As was recently pointed out by Dr. W. Barry Wood Jr., the body of medical fact has increased at a remarkable rate in the past 25 years[1], and the present-day medical student is thus expected to master much more than was his predecessor in 1930. And although he is thus ultimately enabled to comprehend more about the pathogenesis and treatment of many diseases, by and large he must expend much more effort in the process.

It seems probable that most of the students who gain admission to medical schools have the intellectual ability to do a creditable job, yet not all of them do. Many factors are involved in the determination of the overall effectiveness of the student; some of these factors can be expressed by the term "adaptation," and form the subject matter of this discussion.

In considering the adaptation of the student to medical school it is proper to begin with a consideration of his situation during his last year in college. It is well known to members of medical school admissions committees and to premedical advisors in the colleges that many college seniors spend too much of their final year worrying about their chances of getting into medical school. Although the ratio of applicants to admissions has dropped significantly in the last few years[2], many students nonetheless have more anxiety than is justified regarding their chances for admission. There is, of course, a spectrum of worry—there are those who are concerned only with the problem of getting in somewhere and those, with better records and more confidence, who ponder the choice of one of several schools. Because it is true that the majority of medical students are well-motivated toward medicine and have grave anxiety for their futures should they fail to gain admission, the waiting period becomes all the more fraught with tenseness and fear. Indeed, many premedical students begin to worry excessively about gaining admission to medical school long before they reach their senior year. Some even look upon college as a required "purgatory." It is not unusual to have applicants, seeking admission after their junior year, answer the question "why don't you want to finish your fourth year of college?" with "I wouldn't get anything out of it" or "Medicine is what I want and the sooner I can get into it the better."

Two other stresses are corollaries to the ever-present anxiety of the premedical student. First, because grades are important in the eyes of admissions committees, applicants often consider grades as ends in themselves, and not infrequently forget the main

purposes of education. As a result, they "cram" or try to "hit the exam," and fail to retain as much of the material as might have been true had a sounder study approach been used. And the latter might have led to a better grade! Further, as indicated later, students who place too much emphasis on grades may be badly shaken by their experience in medical school where the expected standards of performance are higher, the competition stiffer and grades *per se* of less moment. Second, despite the recognition in many quarters of the importance of a good general education, premedical students still take far more science courses than are desirable; such courses are chosen not because they interest the applicants especially but because they have been told, usually unreliably, that these courses will help them to get into medical school. Many medical educators share the view that college students would be well advised to omit courses like histology, physiology and bacteriology, which form part of the medical curriculum, unless such students are genuinely interested in these fields rather than pursuing the courses as a means of gaining admission to medical school.

One other factor which merits mention, and which contributes to the anxiety of the premedical student, is the difficulty he finds in many instances of obtaining reliable information regarding the choice of a medical school. Whereas there are many good medical schools in this country, there are differences between them and ideally a given student would do well to go to the school which offers opportunities best suited to his overall interests. Unfortunately, the average applicant is unable to get objective opinions about schools which would enable him to make a rational choice.

A word in regard to the period which transpires between the student's admission and his actual beginning in medical school is in order. For many students the period is one of pleasant anticipation, characterized by the feeling that they are at last "on their way." Conversely, however, it is quite clear that for others a new pattern of anxiety develops. Those in the latter group begin to think more of all the frightening aspects of medical school—the greatly increased work-load and the intense competition, and they may begin to have pause regarding their chances of success. Each year a certain number of students in this category appears, and despite reassurance on the first day of school to the effect that the faculty has every reason to believe that those admitted have the ability to complete the required course successfully, there are always some who fail to shed their excessive apprehension and insecurity. Others, and especially the very grade-conscious ones, find it hard to realize that medical school is different from college in that one may do middle-third or even lower-third work in medical school and still be considered a very respectable student with a potential for making a contribution as a fine physician.

The actual plunge into the medical school curriculum is a real shock for many students. It is, as already noted, clear that an awareness of the increased work-load has come prior to the start of school, but many students are unprepared and are often overwhelmed by the amount of material presented. The fact that they are told by their instructors that one cannot learn everything may constitute only a small measure of reassurance, and those who have not developed proper study habits find it particularly difficult to select the important from the less important. Some "push too hard" and forget that for most of us the

aphorism "all work and no play makes Jack a dull boy" has pertinence.

Perhaps the foregoing paints too pessimistic a picture. Obviously, it does not apply to all students to the same degree, although I suspect that no medical student is untouched by one or more of the anxieties outlined. The number who need help is variable but probably larger than is often realized. Here the contribution of a dean of students, interested and approachable, and of a well-organized student health service with physicians who are sensitive to these problems, can make a great difference. Also, as Dr. Saslow points out in his paper in this issue, if first year students have some curricular contact with the psychiatric consultant to the student health service, and become aware of his interest in them and his availability, he too may have the opportunity to be extremely useful. Finally, the awareness by instructors in the first year courses of the adaptation problem, and their willingness to cooperate in its management can accomplish much.

For example, to the student who does badly in his first examination it may seem as if "all is lost." Often a small amount of reassurance by an instructor at this point can correct the aberration in perspective; or, if necessary, the student may be referred to the dean of students so that the student's adjustment may be discussed in detail and suitable measures for its management instituted. It is very gratifying how often one or two such interviews in which the student has a chance to express his feelings and to obtain the advice of an interested, experienced and emotionally detached counselor may make a great difference to the student's subsequent attitudes and performance.

There is no doubt that the first year, and especially the first few months of the first year, represent the most difficult period for the average student. Once successfully through it most students have a relatively smooth course, although there are other adjustments to be made, several of which Dr. Hill describes in his paper. At least, however, students lose a good bit of their fear regarding severance, and come to accept the fact that the faculty is primarily concerned with their remaining in school. At this juncture, students often begin to enjoy their courses, and recognize that they have relevance one to the other. This realization often comes late, partly because of the unfortunate concept of many medical students that clinical work is the be-all and end-all. In effect, just as some considered college a temporary "road block," the same reasoning is transferred to the preclinical years; indeed, there are certainly those who go through their professional life always looking ahead and never appreciating the present. Such individuals would profit from Sir William Osler's admonitions as set forth in his "A Way of Life."[3] The importance of a sound fundamental background in medicine as afforded by proper preclinical preparation is lost on some students, but does come sooner or later to many, at least to those exposed to the type of clinical teaching where emphasis is placed on pathologic physiology and the basic mechanisms of disease.

There are other factors which play a role in the medical student's life. The increasing cost of medical education has affected more and more of our students in an adverse fashion. The number with financial problems increases each year, particularly in those private schools where the tuition is relatively high and to which students are drawn from wide geo-

graphical locations. The demands of the curriculum are such that few students, especially in the first and second years, can hope to earn a very large percentage of their expenses. Further, the marked increase in the number of married students has also created problems; whereas the income of a working wife may suffice to pay all or almost all of the educational and living costs, illness, or much more commonly, the advent of children, converts a reasonably favorable situation into an extremely difficult one. Very few, if any, medical schools can afford to subsidize a large number of unmarried students, much less married ones with families. Students who face domestic and/or financial problems in general make less satisfactory scholastic showings than they might otherwise do, and many sacrifice postgraduate training on these counts. To date, there is no obvious means of handling this difficult situation, but it is one which should concern all those interested in medical education.

Adequate housing, including in this term, facilities for eating, recreation and relaxation, are an immeasurable aid to the student's adaptation. Ideally, there should be a well-designed dormitory, affording living quarters for unmarried and married students as well, adjoining the school. Relatively few schools provide suitable housing for their students, but it is encouraging that those concerned with medical students have become increasingly interested in meeting this need. As in so many other areas, the necessary funds are large and difficult to obtain.

During their four years, medical students encounter a number of new situations requiring adaptation, not the least of which is the handling of patients. Most students develop in a gratifying way, and are able to meet challenges as they arise. Those who find difficulties become more willing to seek help, and consequently one who has the opportunity to observe a given class as it moves through the four years of medical school gains a feeling of confidence regarding the ultimate product. It seems reasonable to suppose that the more rapidly the adaptation of the student occurs at the outset of his career, the more pleasure and benefit will he derive from his schooling, and the greater will be his contribution as a physician.

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The Student's Viewpoint

ROLLA B. HILL, Jr.

THE CAPACITY OF THE MEDICAL STUDENT to contribute anything constructive to a symposium made up of distinguished medical educators is questionable. The other contributors have at one time experienced what the student is now experiencing, and there is little new under the sun.

What is said below may be something which bears repeating, in view of the insistence with which it appears, in one form or another, in communications between students of the same and different schools. Students are invariably proud of their schools, and will tolerate no criticism from without. When the time is right to praise, a panegyrical logorrhea ensues. In their more critical and lucid moments, however, students are apt to dissect minutely certain aspects of their educational experience, and one of the most frequent subjects is the student-faculty relationship.

The medical student is sometimes accused of being stodgy, unimaginative and unresponsive. Undoubtedly there are grounds for this accusation, but under the proper circumstances the imagination and creativity of the student can be quite devastating. Called upon to create an extravaganza lampooning his teachers' idiosyncrasies, or a satire dramatizing heroic medical deeds of yore, with appropriate sets, properties, costumes and music, he efficiently organizes his committees and brings into being, with cunning and dispatch, a masterpiece of ingenuity and polish. And he can impress one who passes him in the hall and catches a few words of tremendous reconditeness, not only with his erudition, but with his evident thoughtfulness, alertness and sincerity. But start this same student on a discussion of medical education, or happen upon him in the coffee shop as he loudly proclaims to his companions the injustices he has perforce suffered at the hands of a malevolent unfeeling superior, and the mature educator will perhaps be more struck with the lack of imagination and proportion which he shows.

I think that the main reason for this lack of imagination lies in the situation in which we students find ourselves. Placed in a position of being forced to pay heavily in time and money for a present life of subservience, with our real rewards of autonomy and of satisfaction with our own accomplishments lying quite in the future, we would prefer to think that our specific education is the sole aim of the medical center. Unable to find present satisfaction in medical expression, we substitute an ideal of education which is probably unattainable. Whenever this ideal is not met, we tend to criticize the teaching, the apparent source of frustration.

Because he feels that his own interests and educational needs are being at least indirectly served through his brothers in other schools, the av-

At the time this symposium was prepared, Dr. Hill was a fourth year student at the University of Rochester School of Medicine; he is now an intern at the University Hospital, Columbus, Ohio.

erage student views with a lively interest the experiments which are under way in almost every medical school, more particularly the wider-reaching and more spectacular ones such as those at the medical schools of Western Reserve, Harvard, Vanderbilt, Pennsylvania, Southern California, Kansas and Yale. He eagerly discusses and compares educational notes with his comrades in other schools. He is aware, and very gratefully so, of the remarkable and sweeping changes in medical education which have come about, first as a result of the Flexner Report, and later as the psychiatrists and social workers have made us more consciously aware of "total," "comprehensive," or "holistic" medicine. He is alive to the continuing efforts by all educators further to improve the teaching of medicine. He is deeply conscious of the distinguished position of American medicine and medical teaching in the world today. He is quick to react in an appropriate and thoughtful way to proposed changes in curriculum. When his opinion is asked regarding a specific educational problem, he usually responds eagerly and constructively. But when his self-respect and self-concept are undermined by reason of an inappropriate teaching method, an inadequate teacher or an inefficient system, he usually allows himself a reaction of blind negativistic self-interest. His reaction is apt to be "Get rid of this; it does me no good."

It may or may not be true that it does him no good; however, in the overall conduct of a teaching department, many objectives must be satisfied. As Dr. William Bean has recently said[1], the objectives of a department of medicine are fourfold: education, research, practice of medicine and administration. The same broad groups apply to almost any department. The first three categories, and perhaps the fourth, cover a tremendous range, and is it conceivable that all objectives can be met without conflict? Or even that the goals of education for each of a large group of students with a wide variety of aims can be similar?

I have a feeling that medical students are regarded suspiciously by many educators, and I think it is because the educators are facing the problems involved in education, research, practice and administration; while the students, on the whole, are much less concerned with the last three. This is not to say that medical school instructors are bitter or have something other than the welfare of the students at heart; the student cannot peruse the pages of this Journal, for instance, without feeling warmly that he is in good hands. But there is a divergence of aims.

I do not take sides, because I do not believe there is a struggle. But I think it should be noted and admitted by both faculty and students that there will be occasions when one will feel the other is doing him an injustice. For the student, I can say that he tends to become disturbed in a manner which reduces his interest and hence his learning power. I believe that this frustration of self-expression and the resultant rebellion may be a part of the explanation for the astonishing amount of dabbling as well as deep interest in the arts and other extra-medical activities which one finds among medical students. At Rochester, for instance, there is a Bach cantata group composed of medical personnel which gives regular concerts, a contingent which contributes to the membership of various city and all-university musical performing groups, a pride of barber shop quartets, an active collection of artists, some ardent and expert photographers, a covey of audiophiles, an

ornithological society, a basketball team which is near the top in the county amateur league, a close-knit group of skiers and campers, and the usual run of hotly contesting intramural sports leagues, to list some of the nonmedical activities.

Other schools can make additions to this list: the full scale musical comedy productions, large professional yearbooks and so on. Some students, however, prefer to direct their excess or frustrated energies into research. This last is a phenomenon that perhaps needs to be understood more, for here, I am sure, is an activity that all educators favor. In my own experience, close association with my professors in a research project was one of the most satisfying experiences in my medical education.

Understanding of the processes going on in our minds will inevitably lead to more mutual trust and, I think, to redetermination and redirection of the students' energies. We do not mean to be slow or negativistic. Perhaps we are the way we are, because the four years in medical school are deeply disturbing, and we are no longer allowed to erect the easy deference of callousness—the "aloof, hardhearted doctor" that once was fashionable is *demodé*. On our first day of classes, young college graduates, we are thrust into a disconcerting, to say the least, proximity to a recently dead person. Evidence of the inner turmoil this arouses is the "dissecting room humor" which is so popular in anatomy classrooms. In the autopsy room, the first view of the desecration of a still warm body by the prosector's knife often produces more severe somatic reactions: vomiting or syncope is by no means uncommon. Still later, we watch slow or quick death again and again, and we watch the long motionless vigil of the mute parents, frightened, bewildered at the bedside of a critically ill infant, and we become aware, intimately, of the callow people whose superficial concern thinly disguises an underlying greedy interest more in death than in life, and we deal with frantic relatives who in desperation delve through the popular medical articles for clues which they hopefully bring to us, and we curb our anger at people who have come to us to be helped but who unconsciously and unintentionally antagonize us. Through all this, we are told, it is necessary for us to retain equilibrium, not become emotionally involved, and yet not become callous and indifferent. Conversely, when the good hard fight is won, and relief floods over us in great waves, or when we swell excitedly at the miracle of gestation and birth, again we must, by command of one of the great men of modern medicine, show only proud *equanimitas*, never, however, allowing our compassion to be dulled, or our souls hardened.

There is energy and the strength of youth, and there is imagination too and creativity, which must await medical self-expression for many years. Meanwhile, the student is eager for a partial outlet, and approached directly with candor and sincerity will gladly set himself thoughtfully to any task which concerns him and his future. When forced into an inimical pattern, however good it may seem to others, he is resentful and the basic dissatisfaction again becomes evident. He wants to feel, as anyone should, that he is being considered as an important, distinct part of the medical center, not a seal being trained for export, and dismissed with relief every June for three months. The more the student is directly acquainted with the problems involved in his education, the more his interest, and the less his resent-

ment. At Rochester, spirit and interest have been highest in those courses in which the student is regularly consulted concerning possible improvements, and particularly in those courses which show yearly changes based on student suggestions. And one of our prides has been that in the past, representatives of the student body have always been met with regarding contemplated major and, usually, minor administrative changes directly involving the students.

In this democratic age and country, the social gulf between governor and governed, administrator and employee, even officer and enlisted man, is rapidly narrowing, and narrower yet than these is that which remains between teacher and student. We are all pleased with this, and we attempt further to diminish the separation with social gatherings of every sort. Certainly this eliminates certain sources of discontent, yet it makes the student more demanding of the teacher's time and removes the barriers to student criticism, creating the problems which I have commented on above. These problems will, I am sure, be happily resolved by the same spirit which has made possible the closer social communion between the students and their teachers. Increased mutual interest and trust, more efficient use of energies, and better taught students will surely result from more thorough understanding of the teacher's dilemma by the student, and more cooperative management of teaching and administrative decisions.

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The Student Health Service in a Medical School

CLAYTON G. LOOSLI

HEALTH SERVICE PROGRAMS for medical students vary widely at different medical schools from the first aid station, to clinics equipped and staffed to provide complete care including hospitalization. The problems of establishing and maintaining an adequate health service for students are many and space will not permit a discussion of them. The purpose of this report is to describe the organization and activities of the health service at the University of Chicago.

Medical care for medical students is provided by the university health service which serves all the students registered on the Quadrangles. It is

Dr. Loosli is professor of preventive medicine at the University of Chicago Medical School. He was director of the University Health Service from 1946 to 1949.

the aim of the health service "to provide such medical care and advice to students as will enable them to take the maximum advantage of the opportunities offered by the university."

For administrative and budget purposes the health service is in the department of the dean of students of the university. The medical staff, however, hold appointments in the school of medicine which is located on the campus and which is part of the division of biological sciences. The appointments to the health service staff are made then with the approval of the deans of these two departments. An annual budget based on expenditures of the previous year is provided for salaries, cost of hospitalization, referral service to special clinics and special laboratory procedures.

The physicians devote part or all of their clinic time to the care of students. The number of physicians in any one year varies depending on the student enrollment. At the present time the staff is of sufficient size so as to provide the equivalent of four internists in the clinic each morning and afternoon. In addition, two dermatologists and a gynecologist each devote two half-days per week to the care of students by appointment. Psychiatric services are available by appointment during clinic hours and are provided by one full time psychiatrist plus the help of others on rotation from the division of psychiatry in the school of medicine. The remaining personnel of the university health service (four nurses, three laboratory technicians and seven secretarial and administrative persons) contribute greatly to the over-all care of the students by relieving the physicians of many administrative and technical burdens which allow them to devote more time to direct student care.

The health service clinic is readily accessible to the students. It is located on the first floor of a wing of Billings hospital, the main teaching unit of the medical school. It is of sufficient size to house the administrative staff, the medical records, the physicians' offices, examining rooms and a laboratory where routine procedures are carried out such as blood counts, urine examinations and skin tests. The clinic is open from 9 to 11:30 a. m. and from 1:15 to 4:30 p. m. Monday through Friday and from 9 to 11:30 on Saturday. Students needing care outside these hours are seen in the hospital emergency clinic which operates on a 24-hour basis. House and room calls are discouraged since it is the conviction of the staff that better care and treatment can be obtained in the clinic, emergency room or hospital. Ambulance service is available to transport seriously ill students to the hospital.

A medical examination is required of all undergraduate and graduate students registering at the university for the first time. The history and findings are recorded on regular forms, with slight modifications, which are employed in the University of Chicago Clinics. A hospital unit number is given each history and both the clinic record and record of hospitalizations, if any, are kept in the same folder. The examination is designed "to protect the individual against work for which he or she is physically unqualified, to discover defects which may be corrected, and to guard the university community against communicable diseases."

On entrance the student is given a general physical examination by a physician, vision and hearing tests, chest microfilm, Kahn blood test, urine examination, skin test for evidence of tuberculosis, vaccination or revaccination against smallpox and, if requested by the physician, blood

cell examination. If abnormal findings are brought to light the student is called back immediately for a re-check and further evaluation.

As part of the tuberculosis control program all students are required to have an annual chest microfilm and skin tests. Those showing a conversion from a negative to a positive reaction are followed at three month intervals. At each visit a physical examination, blood count, sedimentation rate and a chest microfilm are obtained. If no evidence of activity develops after a year, students are then re-examined on an annual basis. Likewise, students showing evidence of other chronic illnesses, physical deformities or emotional problems are given special attention. Medical students during the third and fourth year of school when they are seeing patients on the wards and in the clinics are required to have a chest microfilm every three months at the beginning of each quarter and a tuberculin skin test at six month intervals. During the past two years BGG vaccination has been offered on a voluntary basis. During the second year, before beginning their study of bacteriology and pathology, they are immunized against typhoid fever, diphtheria and tetanus.

As stated above, the university health service provides both ambulatory and emergency medical care during its clinic hours and similar care in Billings hospital through the emergency service when the clinic is not open. All laboratory facilities for obtaining X-rays, basal metabolism tests, electrocardiograms, blood chemistry, bacteriological and serological tests, etc. necessary for the diagnosis and adequate treatment of disease are provided either in the clinic or by special laboratories in the hospital on a unit cost basis. Referral to special clinics of the medical school is made only at the discretion of the health service physician. Eye refractions are not included in the health service coverage but may be obtained in the eye clinic at the base rate to the student by appointment through the health service. The cost of drugs which may be prescribed is not included in the health service coverage.

During the third and fourth years when the medical students have become acquainted with members of the intern and resident staff some seek "curbstone" consultations from these "specialists." Likewise, medical advice is often sought from the members of the clinics faculty. The recommendation is usually that the student report to the health service for any recommended diagnostic tests or care. Maintenance of high standards of performance in the university health service is dependent on the continued interest and cooperation of the medical school faculty.

Students requiring hospitalization are admitted to Billings hospital and are cared for by the regular attending staffs of the respective services to which they are admitted. The majority are admitted to the infectious disease service. Surgical operations are performed by one of the full time surgical staff. The health service provides up to three weeks of hospitalization for any one illness and for the quarantine period of any communicable disease, use of the operating room for emergency operations, professional services during hospitalization and any diagnostic procedures (X-rays, B.M.R., blood chemistry, etc.) and drugs necessary for the diagnosis, care and treatment of the student. The hospital privileges do not include private rooms, special nurses or elective operations.

Medical students do become ill and need care. An examination of their

health records at the University of Chicago indicates that medical students average approximately three visits a school year to the health service clinic. From 15 to 20 per cent have illnesses of sufficient severity to require hospitalization sometime during their four years in medical school. The majority of hospitalizations are for acute respiratory diseases including influenza, bronchitis and atypical and primary pneumonia. Infectious mononucleosis and hepatitis have been causes of a number of hospitalizations during the past three years. Other causes are bleeding peptic ulcer, ulcerative colitis, malignant disease, bronchial asthma, acute hypersensitivity reaction to drugs, appendicitis and emotional illness.

At the University of Chicago preventive health care is emphasized. Students are encouraged to report to the clinic for any illness, however minor, between their annual examinations. It is felt that this positive approach to health, where emphasis is placed on keeping well, has an important teaching value. Medical students receiving good preventive and curative care from sympathetic physicians while in school cannot help but profit by this experience. Many, we hope, will incorporate this "preventive approach" and sympathetic understanding in their own medical practice.

Psychiatric Problems of Medical Students

GEORGE SASLOW

THE EXPERIENCES SUMMARIZED here are based upon 12 consecutive years of activity as psychiatric consultant to the student health service of the school of medicine and the school of dentistry of Washington University, combined with a similar but shorter and less close relationship to the campus student health service which serves all other schools of the university. Since the frequency of referrals, the range and severity of the problems presented and the faculty attitudes towards psychiatric problems of students seem to be related in a meaningful way, the presentation will touch on each of these matters.

As an approximate indication of the number of medical students who have a personality disorder not adequately accounted for by organ or tissue pathology, and who require psychiatric assistance because they are handicapped in the various ways described by Cameron,[1] we may take the incidental observations of one of our senior psychiatric teachers. By way of evaluating his own teaching, he interviewed privately and at length nearly all the members of a particular junior class. Following these interviews, a number of the students referred themselves for obviously needed psychotherapy. None

Dr. Saslow was professor of psychiatry at Washington University School of Medicine when this paper was written. He is now clinical professor of psychiatry at the Harvard Medical School.

of these had been referred before, though their difficulties, as became clear in therapy, had been present for 10 years at least. When to this group were added other members of the same class who had already had or were now having psychotherapy, it was learned that 26 per cent of this class had been competently diagnosed as needing such assistance. Since the interviewing mentioned above was not directed at all to case-finding, the percentage for the class as a whole is possibly on the low side. Subsequently, a new psychiatric screening test was administered to various groups of university students.[2] The scoring criteria were so chosen as to identify 20 to 25 per cent of several medical student classes as requiring psychiatric assistance. By this test, 18 per cent of a dental student class, 23 per cent of 2,000 entering freshmen at the university (21 per cent of the boys, 33 per cent of the girls) and 60 per cent of 200 consecutive new general medical clinic patients were similarly identified. Thus the frequency with which fairly easily detected need for psychiatric assistance occurs in our medical students is about the same as for dental students and college freshmen, but considerably lower than in an unselected medical clinic population.

Except for the particular class which had been interviewed as described, by no means have 26 per cent of preceding and following classes been referred for psychotherapy during their four years. In general, the number of students in psychotherapy in any one year has varied from four to 15 per cent of the entire medical student body, with a moderate percentage of these requiring assistance for more than one year. By the time a given class has been graduated, 10 to 20 per cent of its members have seen a psychotherapist at some point; the number of such contacts initiated in the first, second, third and fourth years, being (somewhat surprisingly) approximately the same. Excluding students referred for academic reasons (Category 2, Table 1), about 65 per cent of the medical students who see the psychiatric consultant have been referred by the health service, 26 per cent by themselves and 15 per cent by dean's office and faculty.

Per 1,000 students, the campus student health service sees one student for psychiatric evaluation, disposition or psychotherapy for every 60 medical students who come to a psychotherapist. Our dental school is across the street from the medical school, the dental student and the medical student pay the same yearly health service fee and go to the same health service doctors, but (in different years) we see for psychotherapy eight to 20 medical students for each dental student. Thus the frequency with which medical students utilize available psychotherapy cannot be determined entirely by any of these factors: a compulsory all-coverage fee to the medical center health service, the frequency of handicapping personality disorders, the composition and attitudes towards psychotherapy of the health service professional staff, or the availability of psychotherapy (dental and medical students who ask for such help or are referred for it are seen in order of request.)

We have made no planned observations that could help define factors relevant to these and other differences between the use of psychiatric assistance by our medical students and other student groups. Comments of medical students who have used psychiatric assistance or who are self-referred suggest some leads. The psychiatric consultant to their health service is a member of the medical school faculty, whom they have a

chance to appraise in the second week of their first year. He appears at that time (together with the head of the health service and the dean of students) on a panel devoted to freshman student questions about medicine and medical school. Subsequently, he conducts four sessions of the freshman course Preventive Medicine 10, which deals with the health and effectiveness of the medical student.

In these sessions, he presents a comprehensive approach to problems of medical students as well as patients, which will be reinforced later by a course dealing with emotions,

TABLE 1

Category	Percentage	Remarks
1. Anxiety reaction, incl. hypochondriacal preoccupation	20	Approx. ⅓ of the hypochondriacal student referrals are apparently precipitated in sophomore year, at time of course in general pathology. The others are sent by the health service as soon as the pattern is clear.
2. Ineffective in school work	17	High or low in ability; rebellious vs. parental choice; never learned to study; over-indulged all his life; difficulty with English, etc. This group referred by dean's office, faculty, promotion committees.
3. Depression, recurrent, accessible to interview therapy	7	
4. Obsessive-compulsive neurosis	7	
5. Psychopathic personality	6	
6. Schizoid personality	6	
7. Hysteria	5	According to the criteria of Purtell et al., J.A.M.A., 1953, 151, 997-986.
8. Psychophysiological reactions, chiefly of gastro-intestinal tract	5	Ulcerative colitis; irritable colon; duodenal ulcer; anorexia, nausea and vomiting.
9. Psychosis	4	Schizophrenia, acute; manic-depressive, depressed.
10. Psychophysiological reactions, chiefly of cardiovascular and of respiratory systems	4	Labile essential hypertension; arrhythmias; extrasystoles; asthma.
11. Migraine and other headache	4	
12. General emotional immaturity	4	
13. Stuttering	1.5	
14. Narcolepsy	1.5	
15. Confusion about sexuality and overt homosexuality	1.5	
16. Ill-defined	1.5	Question of interest in medicine, or of a niche within medicine.
17. Psychophysiological reactions, chiefly of musculoskeletal system	1	Rheumatoid arthritis
18. Ditto, of skin	1	Psoriasis.
19. Adult situational reaction	1	Parental difficulties.
20. Cyclothymic personality	1	

learning and behavior, and in the second year, by a course which consists essentially of a series of planned variations upon the theme of a comprehensive approach to medical problems.[3] We are told by students who see us some time after they have been debating the possibility, and by graduates who ask for help during internship or residency, that a major factor in their decision to get to work on their problems has been their appraisal of the psychiatric consultant or his colleagues as competent physicians whose attitudes and behavior (when dealing as teachers with medical problems and patients demonstrated in interviews) were nonjudgmental, nonaccusatory and non-threatening. Further, students in psychotherapy are often pumped by as many as four to six others who need assistance, are as yet unable to ask for it, and hope to get helpful hints from a student who can work with a therapist. We have found no effective way of accelerating the decision-making process in such vicarious experiencers of psychotherapy, and have never felt that the advantages of individual coercion to enter therapy or of the coercive formation of student therapy groups could outweigh the obvious contradiction between such insistence and the respect for a patient's integrity which we teach in class and clinic.

But such student networks often help a student not yet in therapy to make up his mind one way or the other. Since a considerable number of students are in therapy at one time, and the students know each other well, the examples of beneficial, disadvantageous or ineffective therapy are plain for all to see. Students ask for particular therapists, and reject others, on this basis. Their networks help them with questions such as the possible hopelessness or seriousness or triviality of a problem; they come to know that their self-diagnosis as having a problem is considered a sufficient basis for getting to work on it, so that its nature, boundaries and effects can be explored.

Another factor that appears of importance is the attitude of the dean's office (particularly of the dean of students) and of the faculty in general towards students whose effectiveness is not what it might be. This attitude has, of course, its determinants unique to each individual faculty member, but in addition is influenced by a recurrent, cumulative experience with student difficulties that is shared by a considerable number of the faculty.

This experience is the annual meeting of the promotion committee for the first year class, for the second year class, etc. Each such meeting is attended by the professor of a department and a (rotating) younger staff member, with both clinical and preclinical departments in attendance when each of the four classes is reviewed, as well as the dean, the registrar, the assistant deans, the head of the health service and the psychiatric consultant to the health service.

Recommendations adopted in one year can be examined for consequences the next; the highly individual patterns that some students show as they go through their academic subjects or move from preclinical to clinical work become clearly visible, are appreciated and protected. The possibilities of helping the student whose personal difficulties interfere with his professional goals become appreciated as the evidence comes in; the kinds of clues that a faculty member can pick up to help a student get assistance from the health service early rather than late become defined for all. And all tend to modify the old view that referral for psychological and psychiatric

evaluation is appropriate only in obviously serious situations or only for dispositional purposes. A consequence of this shared cumulative experience of the active teaching faculty is that referrals are suggested to students in a natural, accepting and positive manner, as a chance for help with a defined difficulty. This shared attitude towards referral to the psychiatric consultant to the health service probably accounts for the wide spectrum of problems we see in the medical student group; in contrast, dental student problems are nearly always of a severe, acute or emergency character, while campus health service problems that come to the psychiatrist there are heavily weighted with psychosis, academic crisis and disposition.

Information from students that is learned during psychotherapy is given to a promotion committee meeting in confidence, only with the student's consent, and then, only to the degree of detail that is relevant to the decisions to be made. Student confidences have never leaked through a promotion committee. The psychiatric consultant to the health service does not vote in a promotion committee. We have found a rare student who hopes to exploit his need for psychotherapy as a circumstance in extenuation of his academic difficulties; and an equally rare student who puts off psychotherapy for fear he will be given academic latitude he thinks is not fair. A very few students wish no official agency of the school to know that they are seeing a therapist; this wish is respected, and the factors pertinent to it are generally worked out during therapy. A student who leaves school while in therapy continues to work with the therapist, if he does not leave this area; we accept responsibility for him as a person until it is clear what helpful step can next be taken.

Any member of a promotion committee is free to bring up any student in the given class for discussion; thus similar observations by several teachers come to light, and constructive suggestions may be initiated earlier. These may include evaluation by the psychiatric consultant.

Finally, it must be remembered that medical students come into much more frequent and responsible contact with personality malfunction than other student groups, both in their course of instruction and in their daily work with patients.

In any one year, nine or 10 psychotherapists may work with medical students. In a representative year, four of these may be psychiatrists (the professor of the department of psychiatry, the psychiatric consultant, an assistant professor or instructor of psychiatry, a psychiatric resident), three may be internists who have had several years' experience in psychotherapy or if less experienced work with regular supervision, three may be psychologists with considerable experience in psychotherapy. Five hundred hours of therapy may have been utilized by about 40 students and two wives or parents of students. A part-time staff member may give eight hours to one student in the year, and a full-time one 150 hours to one or to 12 students.

The time required by a student has varied from one hour during the four years to over 800 hours spread over nearly 10 years (during the last five of which the former student has been an effective resident and faculty member). The sensitive awareness of the dean of students and of many faculty members to student problems of great variety and many degrees of urgency results in our seeing able students utilize promptly and productively one or a few sessions in

which, while highly motivated, they work on questions such as clinical medicine versus research; medicine versus another occupational choice; feelings of inadequacy in dealing with their patients as human beings, or with certain kinds of patients.

In many such instances, the student has reached the point of considering leaving medical school, or of a noticeable fall in academic effectiveness. In acute situations, a student is seen every day, or more often. Wives or parents are seen as indicated and referred for therapy for themselves, when advisable. Competent psychological testing is available when needed, and is often most useful in focusing the pyschotherapeutic process. At times, the presenting problem appears to be ineffective study habits, or these may come to be defined as a problem during work on other difficulties; in such cases, the student obtains help also from the clinical psychology staff at the medical school.

A few students with severe difficulty in expressing feeling of any sort respond well to attempted free association, but we cannot convince ourselves that all therapy should be of this kind. Nor have we found it essential that all therapists be psychoanalyzed for noticeable beneficial changes in the students to occur.

The types of problems presented may, in one framework, that of diagnosis, be described as including the categories shown in Table 1. The percentages are based upon a sample of 200 medical students seen consecutively since September 1944, and are rounded off.

If we were to attempt description of the students' problems in terms of relevant earlier life experiences, family patterns of physiological response and disease, or patterns of adjustive techniques, we would not, so far as my experience with nonmedical student patients is predictive, find any striking differences between two such groups bearing any one of the diagnostic labels in Table 1. The learnings in therapy, however, often seem more prompt and generalize more widely than in similar nonmedical patients, such as graduate students, social workers and young professional and managerial persons.

Although we have made no systematic study of outcome, since this is a notoriously complex undertaking, we appear to have a pattern of results like that often observed in the treatment of various chronic intermittent disorders: a good outcome in 60 per cent, a fair outcome in 25 per cent and a poor outcome (unchanged or worse) in 15 per cent. In considering outcome as poor, fair or good, we have taken into account reduction in symptoms, persistent improvement over a handicapping pattern of adjustive techniques, increased self esteem, increased satisfaction with medicine or alternative career choice, greater effectiveness as a medical student.

The nature of the association of referral for psychotherapy with academic standing is noteworthy. The students in therapy are drawn about as often from the top third as from the bottom third of a class; in general, we have seen higher percentages of students from top and bottom thirds than from the middle third. Whether the same observation has been made at other medical schools we do not know.

The presentation describes the use which medical students make of available psychiatric help in a setting characterized by a student health service operating on a compulsory all-coverage fee basis, by faculty and dean's office attitudes favorable to the realization of students' potentialities despite obvious difficulties, and by a

flexible psychotherapeutic approach within the framework of comprehensive medicine.

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Objectives of a Medical Student Advisory System

GLEN R. LEYMASTER

A YEAR AGO, as a result of faculty dissatisfaction with the existing medical student adviser system at the University of Utah, a faculty committee was appointed by the dean of the medical school to evaluate the system and to formulate proposals for improvements. As a result of this committee's deliberations, some ideas were crystallized regarding the objectives and scope of a student adviser system which may be of help in other medical schools. It is not implied that the system formerly in existence was hopelessly bad or that the altered one is ideal. In fact, it has not been in operation long enough for an evaluation. Indeed, it is apparent that any system cannot be considered to be established for all time but should have constant revision and adaptation to meet current needs.

It is clear to any medical educator that a medical student makes profound changes during the course of his four years in medical school. That these changes include intellectual and technical proficiency has long been recognized, and most of the course work, examinations and student evaluations are based on this phase of student development.

That a student undergoes other extensive changes in the cultural area and in the realm of professional development has not been so clearly appreciated. We clearly recognize that the entering medical student lacks the knowledge of the graduating physician. We do not so clearly recognize that he lacks many other attributes of the mature physician. He enters school with feelings, emotions, knowledge of ethics, feelings about medical practice and biases regarding certain types of illness that are far more similar to those of the patient than to the practitioner of medicine. In his four years of medical school he often has to develop entirely new methods of study and of self-education. He is

Dr. Leymaster is professor and head of the department of preventive medicine in the college of medicine, and director of the health service, University of Utah.

faced with increasing responsibility. He deals with patient problems that run the entire range of human emotion and is expected to learn to deal with these problems in a way that will set a pattern for his professional behavior.

In addition to the problems related to his professional education, often he is making major personal and social adjustments at the same time. Many of the students will have wives and children with their attendant social and economic problems.

If these statements are true, it would seem that the medical student has more than the average amount of stress placed on him. There is clear-cut evidence that the medical student has more than average intelligence, and intellectually he is a superior being.[1] There are hints, however, that he may have more than the usual amount of emotional problems. There is little in current procedures of selecting medical students that would indicate that they are particularly more stable emotionally than average students. In view of the increasing emphasis on scientific preparation for medical students, it would seem possible that some of the suggestions of Dr. Lawrence Kubie[2] and of Dr. Anne Roe,[3] while not applying directly to the medical profession, may have some pertinence.

It is with recognition that the acquiring of an M.D. degree involves something more than the acquisition of intellectual and technical capacity that the faculty adviser system would seem to be most useful. The objective of such a system then becomes quite simple. *It is to assist the student in whatever way necessary to become the kind of a physician which we want in our community, whether he may be in practice, teaching, research or all three.*

The functions of the adviser system then would be primarily in the field of social, emotional and professional development rather than in the strictly academic field, since there is already within the medical school curriculum a great deal of emphasis on intellectual and technical development.

This relationship, then, can be conceived as being a very personal association of two men, equal in most things except the degree of maturity within their chosen profession. They are both concerned with the problem of assisting the younger of the two men in learning to be a doctor. Because of his maturity, the older of the two has already met and surmounted many of the difficulties which the younger faces and can help put them in their perspective and perhaps can suggest a solution. Because of his knowledge of the community, including the resources of the university, he may at times be able to direct the student to sources of financial, legal, emotional or social help. The older of the two needs to bring to this relationship relatively few attributes. Some of them are:

(1) maturity, (2) objective interest in the student's problems, (3) a willingness to listen, (4) a degree of emotional security of his own, (5) a clear idea of all of the aims of medical education, and (6) a desire to help the student work out his problems without taking over responsibility for them.

The terms "adviser" and "advisee" have been deliberately left out of this discussion, because in this type of relationship *both* the student and the faculty member are advisees and advisors. We all are painfully aware at times that we know very little of the problems of medical students and their feelings as individuals and as students. Our own experience is often too far in the distant past and clouded

by faulty memory. Too, the social and economic circumstances under which present day medical students acquire their education differ from those of even a decade ago. If there is any doubt, compare with 10 years ago the present costs of medical education, the opportunities for specialty practice, the number of new diagnostic and therapeutic procedures, the proportion of students who are married and the average number of children. This relationship presents an opportunity for the faculty to get some of the viewpoint of the student as well as for the student to get an appreciation of the objectives of the medical school. Such an interchange of ideas should do much to lessen the tension and occasional antagonism of students for the faculty.

I should like to make it clear that I do not view this relationship as that of a psychiatric social worker or the clinical psychologist toward his patient. I view it rather as the interrelationship of two scholars striving for professional competence, differing mainly in the degree in which they have attained that competence and concentrating their attention on all phases of the professional development of the less mature of the two.

The final responsibility for decisions must remain with the younger student. This is the man whom we shall expect in another few years to make life and death decisions regarding his patients. He must first learn to make major decisions regarding himself, and a domineering advisor must not allow himself to do more than help work out the details of the problems.

The question of who is going to do this job becomes very important. It is tempting to believe that it is easier to handle this necessary part of student development through the establishment of an office and the designation of a person by some such title as *dean of students* to handle this necessary part of professional education. This has several drawbacks.

There is a natural tendency to make such a faculty position an administrative office which is responsible for all of the unpleasantness which is associated with discipline and with scholastic failure. The relationship described above will be far better if it is not tempered by any question of punishment or reward other than that implied in any relationship between peers. It is very difficult to see how any faculty member can help a student work out emotional problems if he simultaneously must decide whether or not this student shall remain in school or leave because of academic failure or behavior difficulties.

The biggest objection to designating a dean of students to serve as adviser is that it relieves the medical school faculty of responsibility for one of the most important and rewarding parts of their job. It is quite clear that a portion of our medical faculties, selected as they are because of research interests and because of interest in caring for patients, are not particularly at ease in this relationship. Some of them manage to go through an entire career in a medical school without becoming very aware of many of the details of medical education. They might be spoken of as experts in "teaching" but with very little knowledge of the process of "learning." Since a large portion of our present day medical family are selected because of their research ability, Kubie's observations and questions regarding the emotional equipment for a scientific career are pertinent. Some of the faculty may not have the emotional equipment to serve well as student advisers. Most, however, when confronted with the

problem will attack it with the energy which they apply to other more familiar fields and will acquire proficiency, to their own profit and to the profit of the educational process in general.

We believe, then, that the objective of the adviser program is best served by having a large number of faculty involved. No faculty person should be forced to serve as an adviser against his will since it seems fairly obvious that if he does not want to do the job that he will not do it well. Having volunteered for the job, he should have an opportunity to discuss with other advisers the duties involved and particularly should become aware of what he is not expected to do. The outline of his duties is as follows:

1. He is to concern himself with every phase of the student's professional development and not only his academic work.

2. He is not expected to be omnipotent. Many of the problems are insoluble. He should use the available resources freely, and to a considerable extent he will be useful because he knows the sources of help that the student may tap.

3. He should realize the value of listening. In the survey which we made a year ago regarding the usefulness of the then existing adviser system, it was apparent that the faculty had very little realization of the usefulness of "lending an ear." The faculty almost unanimously reported that in their opinion the adviser system had no value whatever to the student, whereas about three-fourths of the students reported that the system had been of at least some advantage to them. This seems clearly an underestimation by the faculty of the importance of a friendly, interested discussion of the student's problems.

4. The assignment of advisers to advisees should be as flexible as possible. The entering student knows so little of the faculty that usually it is not possible for him to make a rational selection of an adviser, and if left up to him entirely he will usually not select an adviser at all. By the beginning of his third year he knows most of the members of the faculty and is probably quite capable of making his own selection. For that reason, we assign students to faculty volunteers for the first two years, and they are expected at the end of that time to make their own choice. He is free to continue with his assigned adviser, to select his own, or to dispense with the formal relationship.

5. The faculty adviser should expect to be the student advocate. The administration should not expect him to administer disciplinary or punitive action. As much as possible, the student should feel that he can discuss freely his fears, his weaknesses and his ambitions with his adviser. This is another form of the familiar "privileged communication."

The possible advantages of an effective student adviser system are great. Each student, as a result of frequent contacts with a faculty member, should have a much better understanding of the point of view of the medical school and a better appreciation of the motivation and interest of his faculty. Too often there seems to be an ill-defined but real battle array with the students on one side of the field and the faculty on the other. Student realization that the faculty is sincerely interested in his progress and development and that students and faculty alike are working on a single objective, namely the student's education, is surely the best possible public relations that a medical school can have.

More important, the graduating student should be a better physician and able to practice a more nearly

ideal type of medicine. Surely a student who is assisted in acquiring a mature, well adjusted social and professional life is going to be able to deal more effectively with his patients, his teachers and his colleagues. He may even be able to acquire more technical information during his four years in school if he can attend school with a little less tension and a little less distraction from his social and economic problems.

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Student Research Programs

CLAUDE A. VILLEE

Many of the students entering medical school today have a deep interest in medical research. Some, indeed, have already decided upon a career of full-time research; others intend to combine research with practice or teaching. Although any program of student participation in research faces a variety of difficulties, there is no problem in regard to stimulating the interest of the students in research.

Active participation in research is a valuable experience for any medical student. Only a few can hope to make, while students, such fundamental contributions to medical knowledge as those made by Charles Best and Walter Cannon. But whether or not the research yields useful data or hypotheses, the experience will give the student an appreciation of the effort needed to establish a theory and should enable him to be a better medical practitioner.

The aim of medical education has been aptly stated by Sir Lionel Whitby [1]: "The undergraduate teacher should aim at producing an educated person grounded in principle and method, able to see what the whole of medicine stands for and means, trained to observe with his hands and his senses, encouraged to think logically and critically, instructed in the use of the instruments of measurement, and equipped with a basic knowledge upon which he will continue to build for the rest of his professional life." There can be no doubt that the pursuit of a research problem can be a major contribution toward these aims. The actual subject of the research is much less important than the act of coming to grips with some problem, devising means of making valid observations and then interpreting those observations.

Some medical students, because of experience in research at college or as a research assistant, have an interest in a particular problem, and have a fairly clear idea of what they would like to do. Others have only the vague

Dr. Villee is assistant professor of biological chemistry and tutor in the preclinical sciences at Harvard Medical School.

idea that they would like to try their hand at some sort of research; they may not even know what general field of investigation they want to explore. These latter, of course, need special guidance, but all need space, equipment, reagents, etc., perhaps some financial assistance, and, above all, time. The medical curriculum has a tendency to become more crowded each year, and time for extracurricular research is becoming increasingly difficult to arrange.

Provision is made for student research in a variety of ways at different schools. Some schools, such as Northwestern Medical School, designate one quarter of the fourth year as being free for research. At Yale, the presentation of a dissertation based on original research is one of the requirements for the M. D. degree. The research is done in the laboratory and under the guidance of one of the members of the faculty. The student becomes, in effect, a graduate student in that department and participates in departmental seminars. There is, naturally, a great range in the quality of the dissertations but even the poorest have provided the student with the experience of exploring the literature of some field, working out suitable methods, making observations and writing a formal report.

The laboratories of Harvard Medical School and its associated hospitals provide training for a large number of postdoctoral fellows and for graduate students working towards a Ph. D. in one of the medical sciences. These same laboratories also provide exceptional opportunities for training in research to medical students. Research by medical students at Harvard is entirely optional and each year 10 to 20 members of each of the four classes undertake an investigation under the direction of one of the members of the faculty. Student research is encouraged and guided by a committee of tutors.

The Tutorial Program represents one of Harvard's earlier experiments in medical education. It was begun in 1923 under the aegis of Dean David Edsall and Professor Walter Cannon. The introduction of tutorial instruction in Harvard college just previously and a major revision of the medical school curriculum to provide more free time for the student were two important instigating factors. The tutorial system was designed to provide the more capable students in each class with opportunities and guidance for research, and not to assist those students having difficulty with their regular courses.

Several methods of tutorial instruction have been tried since the program's inception. Originally, eight first-year men were selected each year to receive a special laboratory course in physiology given by the tutor, Dr. Albert Redfield. In this course research methods and problems were emphasized to encourage research in subsequent years of medical school. About half of the students selected for this course did undertake some original investigation in later years of medical school, either with Dr. Redfield or with some other member of the faculty.

Dr. Redfield resigned in 1930 and was succeeded first by Dr. Philip Bard and then by Dr. Arturo Rosenblueth. Later the special physiology course was abandoned and two additional tutors, one in medicine and one in surgery, were appointed to widen the scope of tutorial guidance. The program was discontinued in 1943 because of the accelerated course work during the war, but was reinstituted in 1947.

The tutors decided at the outset that the committee could best fulfill its aim of encouraging student re-

search if it operated with a minimum of formal rules. Accordingly, the application of each student for permission to substitute research time for some of the usually required clinical courses of the fourth year is considered individually. The only formal requirement is that the student rank in the upper half of his class. No more than 15 per cent of any class may be excused from clinical courses for research but this limit has not been approached in any year so far.

At the opening day exercises at the beginning of the first year, the opportunities for research in the medical school and the operation of the tutorial system are described to the members of the entering class. At that time each student is advised to concentrate on the regular class work during the first year to make sure that he can handle it easily before becoming involved in some research program. In earlier years some students became so interested in research that their regular course work suffered and they were in danger of failing. In the latter part of the first year the preclinical tutor learns by individual interviews what previous research experience, if any, each student has had and what aspect of preclinical or clinical investigation appeals to him. A program of reading, or possibly of laboratory work, is arranged for the following summer.

At the beginning of the second year, the students who have indicated an interest in research are invited to participate in a series of weekly seminars. In these, each student has an opportunity to present to his peers what he has done and what he would like to do with his research problem. The group discusses other possible methods of attacking the problem, suggests additional experiments and control observations that might be necessary, and, perhaps, poses alternative hypotheses to explain the data. These seminars have proved to be extremely valuable. Discussion is free and untrammeled, possibly because the students realize that this is not a formal course in which they will receive a grade. The seminars serve several purposes: First, they give each student invaluable experience in speaking and in defending his hypotheses. Second, because of the wide range of topics discussed in the course of the year, they assist other students in deciding on a problem for investigation.

When a student has decided on a field of research, he has a conference with his tutor who tries to find some member of the staff of the medical school or one of the affiliated hospitals who would be willing to invite the student to be a member of his research group. Since staff members are in general eager to have tutorial students do research with them, this is no problem. The staff recognizes that the students are to be either independent investigators or junior members of a research team and in no case are they to be simply unpaid laboratory technicians. A few of the students have research interests which coincide with those of one of the tutors. They may be invited to work in the laboratory of the tutor. The tutors have, however, made an earnest effort to distribute research-minded students among the many laboratories of the medical school and not simply to concentrate them in their own laboratories.

Students are scheduled to have two free afternoons a week in the second and third years. This time may be spent in becoming familiar with the literature that is pertinent, in learning whatever surgical or experimental techniques may be necessary, and in collecting data. However, the number of voluntary clinics and courses,

and the number of hours in the regular second-year curriculum have increased in the past decade so that the opportunities for student research in the second and third years are now considerably less than they were previously. Some students devote their summers to research, others take a leave of absence from medical school and spend a year as a research fellow. This is usually done between the second and third years of the curriculum.

Tutorial seminars continue throughout the second, third and fourth years and provide the student with an opportunity to present progress reports. The fourth-year seminars are usually held in the evening over beer and cokes, and in these each student presents a summary of his research together with a more general review of the field of which it is part. About 20 second-year, 15 third-year and 10 fourth-year men have been participating in these seminars.

A student may apply for the privilege of substituting research months for certain of the clinical courses usually required in his fourth year. In this way he may get from three to six months of the eleven months in the academic year completely free of all other responsibilities to spend in the pursuit of his research problem. The members of the fourth-year class who avail themselves of this privilege are the only ones who are "tutorial students" in the strict sense of the term. Guiding their research, however, is but a small part of the duties of the tutors. In the past eight years about six members of each class have elected to do full-time research as part of their fourth year. Many other students, who wish to take advantage of some of the elective courses offered in the fourth year, take only one or two months of research with some staff member. This is not formal tutorial research since the student does not ask to be excused from any of the required clinical courses.

At the end of his fourth year any student, whether or not he has participated in the tutorial seminars or requested free months for research, may submit to the committee on special honors a thesis based on his research as a medical student. If the thesis is approved, the applicant is given an oral examination covering it and the general field with which it is concerned. The committee invites one or more members of the faculty to read the thesis and to act as special examiners at the oral examination. Some of these theses have been of great distinction and well up to the standard of those fulfilling the requirement for the degree of doctor of philosophy. Their subjects have ranged from the intermediary metabolism of carbon-14 labeled glycerol, and the metabolism of estrogens by tissue extracts, to studies of the laminar flow of blood, histochemical studies of the corpus luteum of pregnancy, the growth of influenza virus on the chorioallantoic membrane, the synthesis of thyroxine analogues, and analyses with a strain gauge of stresses in lower limb orthopedic braces.

On the basis of the thesis and of the general knowledge of the field displayed in the oral examination, the student may be awarded an M. D. *cum laude, magna cum laude* or *summa cum laude* in a special field.

The undergraduate assembly is a student-sponsored meeting held each spring for the presentation of reports on student research. Students are invited to submit short abstracts of their work and from these a student-faculty committee chooses eight or so to be presented at the assembly. Prizes such as the Soma Weiss Award are awarded for the best research reports given at each assembly. The James

Talbot Shipley prize in medicine is given at graduation to a student who has completed an outstanding research problem while an undergraduate.

At the present time there is no dearth of student interest in research or of faculty assistance in providing space, equipment and guidance. At Harvard, advanced work in a special field is given recognition by the granting of the medical degree with honors in a special field.

There are two factors which discourage medical students from undertaking research. One of these is the slow but steady increase in the demands of the regular curriculum on the student's time and the consequent decrease in the free time available for research. The second is scarcity of summer scholarships for student research. As a result of the loss of time for research during the school year, students must do more of their experimental work during the summer and during the fourth year. If a student spends his summers doing research, he is deprived of an opportunity to earn money and may suffer financial hardship as a result. A few students are able to find paid research jobs. Some students, indeed, are faced with the difficult choice between doing research in which they are not particularly interested for pay and of following their own research interests without being paid.

A number of laboratories would be pleased to accept students for summer research but have no funds to pay the student a stipend. There are a few summer research scholarships available from funds supplied by the National Foundation for Infantile Paralysis, by the Lederle Corporation, and by Harvard's endowment. More such scholarships are needed.

For the past 30 years, a system of tutorial guidance has encouraged undergraduate research at Harvard Medical School. The tutors in medicine, surgery and preclinical sciences act as a clearing house for information about student research and about research opportunities, thereby providing a means of contact between students and investigators interested in the same area of research. The tutors arrange seminars in which the students present and discuss their research plans and results. The tutors also guide and arrange the programs of those students who spend three to six months of the fourth year in research. There is abundant student interest in research, and most members of the faculty are happy to invite students into their laboratories. Student research could be considerably enhanced, however, by an increase in the amount of free time during the school year and by an increased provision for summer research scholarships.

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The Medical Student

JOHN R. ELLIS

MEDICAL STUDENTS everywhere have certain characteristics in common. The majority are, at the time of coming to a medical school, poorly educated; perhaps due less to the exclusion of the "humanities" by scientific subjects than to the poor standard of early scientific education. It is not easy to teach science well, and there are many propositions more attractive for scientists than teaching. Secondly, students have great difficulty in realizing that despite scientific advance, the speed and comparative recency of which naturally escapes them, medicine is still full of mysteries. They may accept that just for the moment the cause of cancer remains unknown, but they are bewildered by the difficulty that exists in diagnosing many patients, and astonished that therapy is frequently of no avail. Thirdly, they are convinced that, as students, they should learn the whole content of medical knowledge; and faced with such a formidable task the majority are easily attracted to the teacher whose didactic dogmatism makes learning a passive process. Above all, in clinical work they appreciate results: they like to see the patient get better. Hence the attraction of curative medicine as opposed to preventive: the feeling that organic disease is the really important thing: the preference for the physical sign rather than the more difficult elucidated history.

Lastly, most medical students dislike responsibility. Their training is long, and as students they remain sheltered from many of the cares of active life some years after these have been faced by their contemporaries in other fields. It is increasingly difficult to devise ways by which the student can be given direct responsibility to patients, and in consequence he becomes increasingly apprehensive about taking any.

In all these ways the American medical student seems to me to be little different from any other. He is, on the average, two years older than the British counterpart who seldom has been to college before coming to medical school. His premedical education is probably of poorer quality but it is more leisurely. If, as I suspect, he does not learn very much during it he has the advantage that he is less likely to acquire the bad habits of learning that are often inculcated into British students by their need to memorize vast quantities of factual knowledge in order to pass examinations of a very high standard in chemistry, physics and biology.

There are also probably differences in the factors governing the preselection of medical students, which is always more important than the more commonly discussed selection. The high standard required in preliminary science by British universities tends to frighten away from medicine the boy who is unaware of any aptitude in these subjects. This is, I think, less likely to happen in America and it is possible that the publicity given to

Dr. Ellis is assistant physician to the London Hospital and sub-dean of the London Hospital Medical School of the University of London.

post-war efforts to stress the importance of "comprehensive medicine" in medical training acts as positive encouragement to some who know they are far from scientifically minded.

The American can leave the decision to become a doctor until he is at least 18, whereas in Britain 16 is the usual age. Problems of finance may deter many young Americans, but in Britain medicine is open to anyone who can pass the first examinations and gain admission to a medical school. Eighty-five per cent of British students are state-supported, and financial deterrents weigh more on those whose fathers are in the higher income groups and consequently are ineligible for state grants, even if they earn them by academic merit. The home background of the students of a British medical school is remarkably varied.

Fear of examination failure with resulting withdrawal of financial support is very great in the British students. It operates throughout the preclinical period (except at the Universities of Oxford and Cambridge) and dominates the last of the three clinical years. Despite this, much of the carefree attitude to life that has always been the hall-mark of the English medical student is still obvious. Much remains of the pre-war picture so accurately drawn by Richard Gordon in "Doctor in the House," and many students still bear some slight resemblances to Charles Dickens' Bob Sawyer.

By contrast, the American medical student is a very serious person, and undoubtedly works far harder. While this is in many ways admirable, and is balanced and perhaps encouraged by regular holidays, I believe he would be the better for the outlets available to British students by the many "cultural" societies and athletic clubs which are such a feature of our medical school life. Further, a valuable service is rendered by these activities in that they provide opportunities for staff and students to meet on common ground. This is particularly important now that so many factors, including the increase in clinical staff consequent on specialization and the tendency for them to reside at some distance from the teaching hospitals, are combining to widen the gap between teachers and the taught.

So striking is the intense devotion of the American medical student to his studies that English visitors at once search for reasons to explain what to them appears a phenomenon. Until recently fear of constant examinations and quizzes has often been accepted as the answer. In the schools I personally have visited I think this is certainly not the case. Perhaps there is still some apprehension about examinations in anatomy and other preclinical subjects, but I think it is mild and probably will soon be as negligible as that felt for final examinations. I believe this to be a thoroughly healthy state of affairs and one which will allow examinations to be used in future to aid education, rather than as is so often the case in England to impede it. I am aware that many American universities still have a grim examination system, but I am confident that the picture I have described is that of the present trend of thought in medical education, and the trends are more important than the present practice of the less active schools.

It has been suggested that the American student's dedication to his work is due to acute awareness of being in competition with his colleagues. No doubt some have this attitude of mind, as indeed certain types of student always will have, but I do not think many are activated by it. Nor

do I think that fear of grading and promotion really impairs relations between staff and students to any extent. The American student appears to me to be completely uninhibited in speaking his own mind to any teacher at any time. I am impressed, too, with the critical attitude of mind he adopts, and with the ability he usually possesses to express himself with clarity.

One simple reason why he is hard-working is that he is studying medicine at an age when it is natural to be so. He has had plenty of fun at college and is now ready and able to take things seriously. It is noticeable that the British student who for some reason has completed his two years' military service before entering medical school benefits greatly from being rather more mature.

A second reason, more important than age, financial need or family responsibility, is simply that the American student is impelled by that most powerful incentive to work—interest in it. The interest that the average student in any faculty in any university takes in his work must be in large measure merely a reflection of the interest his teachers take in him. I am greatly impressed by the interest taken in the individual student by the majority of teachers in American medical schools.

No doubt there are still many places where teaching is regarded as synonymous with talking. Here the student is but one of a group about whom nothing is known and little expected, who has no known name or personality, and who can safely be expected to be somewhat ignorant: one of an audience, unwelcome to the teacher whose lecture is to him a tedious task, and most welcome to the teacher whose lecture is to him a splendid opportunity to hear himself on his favorite subject. In such places, usually the larger schools with too many students, too large a staff and too many associated hospitals, the student must fall back on his books, and spurred on only by his desire for complete coverage of all known knowledge impair his education, eyesight and sanity in this sad and hopeless task.

I believe, however, that the present trend is rightly away from this and that in many American medical schools the process of teaching is regarded as imparting inspiration and guidance to learning, with the imparting of factual knowledge only so far as is required by the former. This teaching can only be based on personal contact between teacher and individual student, and it is seen at its best in the best American schools. Where such an attitude of mind exists on the part of the teachers there is little need to look further for incentives to hard work on the part of the students, and the curriculum is by comparison almost unimportant.

Yet this very attitude of mind ensures that great thought is given to the curriculum, and the student has the inestimable advantage of the stimulating atmosphere which exists in a medical school in which an active interest is taken in medical education.

This atmosphere is very obvious to the British visitor. So too is the emphasis on education rather than technical training which almost inevitably arises from it. No one can question the rightness of this emphasis, but medical education while being subject to the general principles of all education is also subject to the peculiar needs of training for work in the profession of medicine. The major need is for facility in the techniques of clinical method, of obtaining information from patients. This is virtually the only part of "undergraduate" medical education which is concerned with technical training. The

techniques are, however, vitally important.

I suspect that American medical students are weak in this respect. In my opinion this weakness derives from the relative absence in American schools of the two things on which facility in clinical method chiefly depends: a sound introduction to it, best given and best received when the student's whole attention can be focussed upon it, and constant and prolonged practice.

It is not that American medical students take poor histories and make poor examinations; it is that they appear to suffer from a lack of balance between their knowledge of medicine and their knowledge of diseased people. This second knowledge can surely only be acquired by the steady application of clinical methods (with increasing skill) to patients. This constitutes experience, and when there is a lack of balance between knowledge and experience there is an increased feeling of insecurity in dealing with patients. The student may, therefore, be unable to benefit so much as he should from the excellent opportunities now given to him in his fourth year in many schools to take responsibility under supervision. What is more he is inclined wrongly to interpret his apprehension as being due to a deficiency of knowledge. He is further handicapped by seldom seeing doctors handling patients as so many clinicians are not responsible for the cases on which they teach.

He is also all the more inclined to relish cases of clear-cut organic disease and to fight shy of the more difficult problems of dysfunction. This is particularly unfortunate for he frequently appears more fitted than other students to take a comprehensive view of medicine. I think this attitude is inculcated mainly by the atmosphere in which he works, from his prolonged acquaintance with psychiatrists and from the leaven of a preventive medicine department working in the school. It seems seldom to arise directly from experience of the kind of project specially designed for this purpose.

The only scheme that can be devised which allows a student to experience a doctor-patient relationship (as opposed to a student-patient relationship) is one by which he can practice as a doctor. No scheme which allows him in his final year to act as a doctor can do anything but frighten him if his clinical experience is greatly inferior to his knowledge—and he will be frightened away from those patients where the consideration of the "whole man" matters most and back to those whose only complaint is one of simple clear-cut organic disease, back to "scientific" medicine.

Yet such schemes are sometimes stated to have as their objective a marriage of "scientific" and "comprehensive" medicine. This would be a remarkable feat, even in Hollywood, for it would be a remarriage of two who have not yet been even separated. The idea that there is great discord between them would seem to arise from the fact that the average medical student favors one more than the other, and I would suggest that the reason for him doing so is that he does not spend nearly long enough in the only place where he can see how close they are—at the bedside.

When he has graduated he does spend longer there. But this last stage of his training, that in which he practices fully yet under supervision, that in which he properly studies therapy, and that in which technical training becomes of paramount importance, is unfortunately not within the control of the university which has previously so carefully devised for him a continuous educational process. The

"gap" between preclinical and clinical studies has attracted much attention, and seems to be almost eliminated as a result. It is to be hoped that the gap between clinical and postgraduate studies will be dealt with similarly and soon.

Until it is, the future of the graduate will remain obscure. At the moment I think he leaves many American medical schools with the ability to learn and the desire to go on learning, though with a weaker grounding in clinical skill. What he finally becomes must depend upon his experience in the immediate postgraduate years, on the circumstances in which he finally works and the degree to which he alters these to his own ends.

In England it has in the past pleased many people to wonder where all the dreadful medical students go to and all the fine young doctors come from. The mystery is not surprising for the metamorphosis takes place in the internship during which the subject is as safely hidden from the public gaze as in some mountain monastery. I would very much like to see what becomes of the fine young American medical students of my acquaintance.

(End of Symposium)

Relation of Students' Attitude Changes to Teaching Techniques — A Preliminary Study

FREDERICK D. McCANDLESS AND MORRIS WEINSTEIN

SURPRISINGLY LITTLE is known about the growth and development of the medical student during his clinical years. It is true that the acquisition of didactically presented material can be measured objectively with written examinations, and to a certain extent the student's judgment may be evaluated in oral examinations. The problem of objectively evaluating the student's ability to include constructive interpersonal relations as an integral part of medical practice and the problem of obtaining a more comprehensive picture of student development requires the use of a flexible, dynamic approach. The investigators have utilized projective psychological techniques usually used to study personality structure. These have been designed specifically for this project. They are, however, not directed at the study of the student's personality as such, but rather at the way in which he adapts his assets to clinical medicine. The goals of the psychological evaluation were first, to elicit from the student those underlying attitudes which structure his approach to his patient and second, to measure roughly the degree of change in these attitudes during his first year of clinical instruction.

Dr. McCandless is associate professor of psychiatry and instructor in the department of public health, Albany Medical College. Dr. Weinstein is assistant professor in psychology and instructor in the department of public health, also at Albany Medical College.

Evaluation Methods

For this preliminary study six medical students, who in their second year showed interest in social as well as medical problems of patients, were offered the opportunity of mobilizing complete medical care for an indigent family during their entire third year in medical school. Psychological testing of the students was done before they met their families and again during the last month of the school year.

Two projective techniques were used. The first was an original sentence completion test, which is a current elaboration of the old word-association method. Each student was asked to complete 28 incomplete stimuli sentences briefly. The stimuli were designed to reveal attitudes toward

* This investigation was part of a pilot project in comprehensive family care as a teaching method. The program has been currently expanded so as to include a larger number of experimental subjects and suitable controls. This study is now being supported by a grant from the W. K. Kellogg Foundation and is under the general direction of Dr. J. Garth Johnson, professor and director of the department of public health, Albany Medical College.

health and illness, toward socio-economic factors and toward motivation in pursuing a medical career. This was followed by a thematic apperception picture designed for this study as a means of eliciting the student's concept of the sickroom situation (Fig. 1). On viewing the picture each student was instructed to answer four questions: "What is happening here?" "What is the woman thinking?" "What is the doctor thinking?" and "What is the outcome?" He was told to use his imagination in developing his ideas within this semi-structured framework. In completing the statements on the sentence completion test and in answering the questions relative to the picture, the students verbalized their latent as well as manifest attitudes towards the issues brought up in these tests.

One of the basic assumptions in utilizing projective techniques is that when the student is presented with a number of ambiguous stimuli he then responds in terms of his apperceptions. By such means the student projects his needs and concepts.[1]

Responses before and after participation in the experimental program were compared. Attitudes revealed by the sentence completion test were scored as positive if they showed movement toward security, insight into the doctor's problems and an emphatic grasp of the situations into which patients are placed. They were scored as negative if they showed movement toward defensive withdrawal, hostility or an increase in anxieties that might impede the doc-

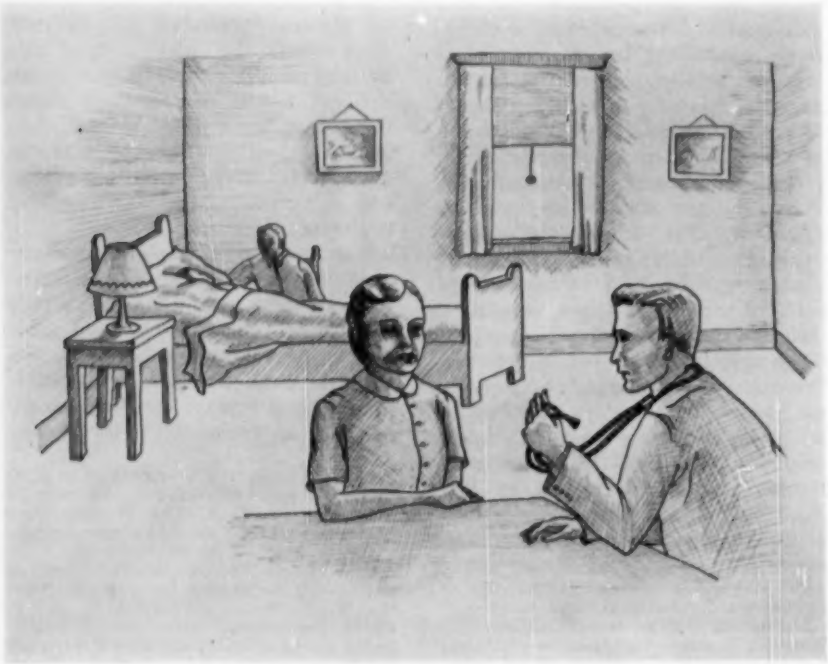

Figure 1: Sickroom Concept Picture

tor-patient relationship. Finally, in contrast to the detection of movements or trends in the students, those attitudes which did not change during the year were noted. The analysis, it should be pointed out, involved a complex distillation of both qualitative and quantitative scores.

Teaching Methods

The students met bi-monthly with the psychiatrist in the project for a total of 10 seminars during which discussions of their problems in handling their patients were tape-recorded. The recordings were re-evaluated at the end of the year in an attempt to discover some of the processes by which attitude changes took place. The seminars themselves served to focus interest not on the patient's difficulties but on the problems each student faced in his role as the family doctor.

In actual practice this means that the students shared experiences and gave each other mutual support in difficult situations: as one student put it, "I am glad to find the others are facing the same thing . . . I thought I was all wrong." Often in discussing their feelings they discovered in themselves biases or attitudes that handicapped them. This self-discovery was a much more powerful corrective experience and led to a more useful synthesis than advice by the instructor.[2] Dispensing authoritative advice was rapidly dropped by the seminar leader and all problems turned back to the group in as stimulating a way as possible. Almost no psychiatric terminology was used and esoteric discussions initiated by the students were restated in simple language. One by-product of this study was the discovery of how often the seminar leader could sabotage the learning experience by talking too much himself.

Results

At the close of the year the psychologist and the psychiatrist evaluated the data independently. Prevalent attitudes held by each student as evaluated on the projective techniques were reflected in seminar discussions and in the student's relationships with his assigned family. After reviewing the test results without knowing the students' names the psychiatrist was able to identify the students on the basis of attitudes in the areas of motivation, health and illness and socio-economic concepts.

Before discussing the attitudes of the students in any detail, it is necessary to give a brief description of each student and the pattern of change as revealed by the sentence completion tests.

Student 1. This student is best epitomized as "the apologetic one," and constantly prefaced his seminar comments with phrases like "I may be stupid but . . ." He was self-critical, introversive and sensitive. He became so anxious for acceptance by his patients that, as he later put it in seminar discussion, "I deluded my family with attention." He had a tendency to substitute persuasiveness and authority for an understanding of the patient's problems: "I wooed my family into it." He showed definite gains in all areas on the sentence completion test. Although in practice his defensiveness with patients was reduced, it is still reflected by the four negative items in the health and illness and socio-economic areas. In these he expressed an underlying autocratic attitude.

Student 2. This man is best epitomized by the term "empathic." He not only showed great sensitivity to the nuances of human relations, but as experience tempered some of his academic idealism he developed a

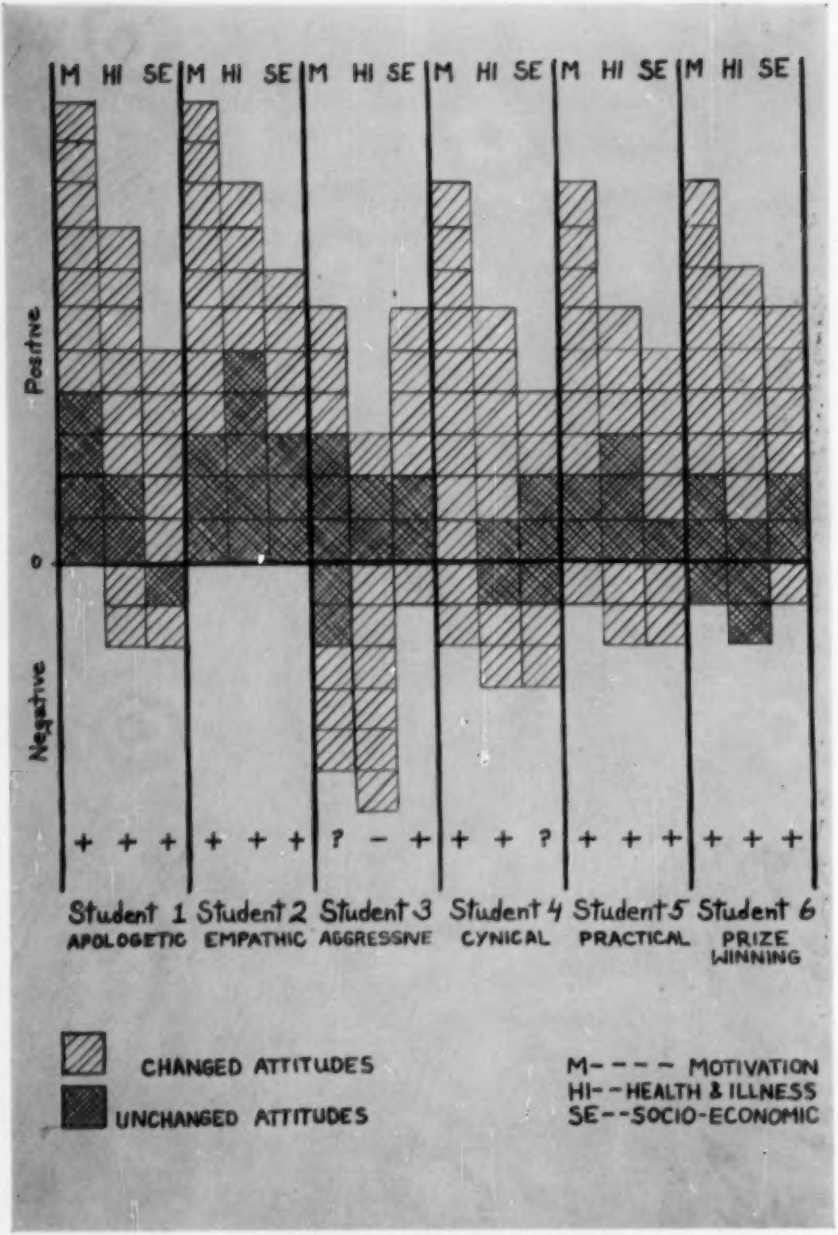

CHART 1. Attitude trends as measured by the medical student sentence completion test. Items that were not contributory were not scored (e.g. 1 item, unscored for student 2, 1 item unscored for student 3, 1 item unscored for student 4, 3 items unscored for student 5, 2 items unscored for student 6).

mature, realistic approach to medical problems. These observations were made during seminars, and it is noteworthy that this was also reflected in the sentence completion test, in which all attitudes were positive at the end of the year.

Student 3. This student, epitomized as "aggressive," showed the greatest number of responses on the projective tests suggesting personality difficulties. In seminars he was laconic, defensive with his classmates and tended to use cliches as if they were cut and dried fact. Despite verbalization about the importance of sociological factors in medicine he was constricted in his approach to human problems. He held the attitude that these problems interfered with the practice of medicine. This correlates with his need for increasing distance from his patients as expressed on the sentence completion test. At the beginning of the year his attitude is that *visiting patients' homes** "is necessary to help them solve problems." At the end of the year his discomfort in facing the patients' problems is revealed in his shift of this responsibility to someone else. He then felt that *visiting patients' homes* "is necessary for medical social workers." He seemed to profit the least of the group from working with an indigent family. He attended only half of the psychiatric seminars.

Student 4. This student was epitomized as "cynical" at the beginning of the year. However a marked change in attitude took place during the year. He was quite defensive at the start. He maintained for some time the suspicion that his patients were out to get something for nothing. Of special note is the fact that all of his attitudes in the area of motivation changed during the year. The changes in his attitudes are described in more detail below.

Student 5. Epitomized as "practical," this outgoing, down-to-earth man was of special interest because at the start it did not seem likely that he would develop much insight into the patients' emotional problems. Actually this was not so. He developed a genuinely skillful approach albeit characterized by his own practical bias. Test results confirm a profitable year.

Student 6. This scholarly student, epitomized as "prize winning" had achieved high academic status in the preclinical years. He has always been able to give the correct answers. He utilized a stereotyped approach with patients at the beginning of his family care experiences. By the end of the year he manifested a tendency toward greater flexibility in dealing with his patients, and this is reflected in test results.

In analyzing the seminar data certain fundamental trends stood out so clearly that it is worthwhile describing them. All students were interested in learning good medical practices and had a strong bias toward applying preventive measures. All but the "aggressive" student had a protective, somewhat possessive feeling toward their patients. All constantly raised issues concerning the doctor's responsibility to the patient. In relation to preventive medicine, the question as to where the limits of responsibility lay occurred most frequently.

As the year progressed it became evident that certain attitudes changed slowly. The attitude that medicine is something "fascinating" and "exciting" developed gradually into a concept that might be typified by "It's hard work, but I like it." Skill in handling patients rather than reliance

*Italicized phrases comprise the stimulus section of the sentence completion test.

solely upon the scientific data of medicine became esteemed. A shift from stereotyped thinking to greater flexibility was definite in all six students. Paralleling their increasingly realistic attitudes, a growing independence developed which indicated that they could operate with greater self-reliance. It is noteworthy that a strongly increasing medical *esprit de corps* was apparent throughout the year.

The most difficult problem faced by the group was the universal apprehension that they would be rejected by the patient. The issue arose constantly in the first five seminars. There was some reality in this for several students because of the nature of the families assigned to them. As experience was shared the difficulty was synthesized by the students themselves as being caused by the fact that, as the "cynic" put it, "We don't know our script." Anxiety over acceptance by the patients disappeared in each student as he was able to do something small but concrete for his patient. After instructing a patient in how to rebandage a minor laceration, the "practical" student told the group, "I realized that doing something does something for the patient."

They found, too, that in their enthusiasm for their work they made some patients quite uncomfortable. The problem lay in the authoritative or persuasive manner in which they approached the patient. As they became aware that it was the way in which they presented their services that caused the trouble, they became less defensive. They also discovered that interpersonal relations are a two-way proposition. The "cynic" with his first real insight into the patient's needs suggested, "The *patient* can be afraid of us." Later, concerning the same topic, the "apologetic" one recalled, "You know, I was practically seducing her into getting that baby immunized." This marked a realization that his attempts to influence the patient had been frightening to her.

At the beginning of the year all students saw the sickroom situation, as revealed by the thematic apperception test, as one which precipitated anxiety. The most prevalent apperception was a description of the doctor as feeling inadequate in handling the family and as trying to remember "statistics concerning prognosis and treatment of the disease." However, after actually having cared for a family, these concepts changed markedly.

In the student initially described as cynical this change was dramatic. In his first response to the sickroom-concept picture he manifested a defensive hostility toward the family:

"1. (Situation) This is a picture of what frequently happens on a call to visit one who is sick. The various members of the family take up valuable time and preference with minor complaints before allowing the doctor to see the really sick individual.

"2. (The doctors thoughts are) That too many people are concerned with their own petty problems to the exclusion of more urgent needs of others. A sort of 'something for nothing' type of attitude.

"3. (The woman's thoughts are) Here is a chance to get some free advice—otherwise I would wait until after he has seen Aunt Lucy.

"4. (Outcome) If the doctor brushes her off or makes her wait until after the patient is taken care of her feelings will be hurt. The same if an extra charge is made for the call."

This student was so ambivalent in the situation that he concluded the story without making a constructive move or coming to a decision. After

nine months as student-physician to an indigent family he changed his concept of the situation and of what should be done. In response to the sickroom-concept picture he now gave the following constructive story:

"The family doctor is attempting to explain to the wife the husband's illness, its prognosis, what she must do in the course of whatever treatment and care is necessary, and alleviating her worries if possible. The wife is worried about her husband, how sick he is and how soon he will be up and around and when he will be back at work, and most probably the cost of it all."

The same student's responses on the sentence completion tests show him to be less academic, less stereotyped and to have more feeling about people at the end of the year. For example, when first tested he said that *most sick people* "are emotionally upset," a terse but academic remark. Nine months later he felt that *most sick people* "are scared to death." Similarly, he stated at the outset that *when people have* "disease, they need help," a cliche. When retested he said that *when people have* "troubles they don't know what to do." It is apparent that he is letting himself think through the emotional implications of illness.

The prize-winning student showed interesting responses on the psychological tests. At the outset he gave more cliche responses than any other student. He knew the correct answers and could marshal them when the occasion demanded. For example, he first stated that *medicine* "is an art." A good answer; a good cliche. The superficiality of the response was confirmed in the seminar recordings where for the first six months he minimized the importance of understanding the patient's feelings except "in psychiatric cases." At the end of the year, however, he asserted that *the practice of* "medicine requires a thorough understanding of the patient." While this may have a familiar ring, it does show a more realistic approach. At the beginning of the year his cautious appraisal was that *visiting patients' homes* "is interesting." After his experience with a self-respecting but fecund laboring family, he responded that home visits "give the physician insight into the patient's surroundings." Characteristically, the "prize winning" student attempted to allay his anxiety with a return to the textbook. He described the sickroom situation before embarking on his experience:

"The scene is in a home. There is a sick child in bed, and her father is watching over her. In the foreground the doctor is discussing the child's condition with the mother.

"The doctor is trying to recall some data that he read several years ago on the patient's condition, so that he may tell the mother her prognosis.

"The mother is thinking that the doctor is trying to hedge or stall her off, as to the chances her daughter has.

"The doctor will convince the parents that the little girl will be O.K. and the little girl recovers and they all live happily ever after."

At the end of the year some of the original biases remain, but the relationship between physician and family is seen in a less threatening light.

"A small child is sick in bed. The father of the child is at the bedside. The doctor is talking to the mother and explaining the condition to her. The mother has asked the physician about the prognosis and the physician is trying to recall some statistics he read on this condition recently."

The second test response is much

less tentative and the insecurity of the fairy-tale ending is gone. However, it is significant that he is still academically oriented and cannot bring the reality of this year's experience completely into the story. The most important change is his lessened defensiveness as evidenced by the more trusting and matter-of-fact attitude of the mother.

The student who showed the most progress as measured by the sentence completion tests was the one described as "empathic." He made gains in a positive direction in all areas despite his assignment to a discouraging and difficult family. His original concept was that *it is important to* "establish good relations with the family involved." Eight months later he felt *it is important to* "evaluate realistically and accurately the *goals* and *capabilities* of the family, physician and (social service) agency." In the first sentence completion test he stated that *one should* 'take plenty of time with each patient attempting to evaluate them fully," but in the last he states *one should* "attempt to form a complete picture of a patient—with all their problems as *they* see them." This shift came after about three months of frustration during which a suspicious schizoid mother kept him at a distance. After discussing this in the seminar group when the issue of patients' fears of doctors came up, he changed his tactics. He later offered the group an explanation of his previous failures saying that by his approach he must have first appeared to the family as a welfare investigator. He was now on good terms with the family and their various medical problems were receiving proper attention. He advised the others, "get your orientation from the family—you can't meet them with your own ideas too fixed." Experience added an important dimension to his concept of being a physician.

Discussion

This study does not, of course, purport to be a statistical survey. It is rather intended to be a qualitative and exploratory presentation of the effect on student attitudes of clinical experience combined with a dynamic teaching technique.

The diverse biases that each volunteer brought into the study at the outset were reflected in his performance. It is possible to demonstrate the effect of growth and of experience in all participants. However, each profited in his own way.

The combination of the projective techniques and small group teaching seems well designed to elicit from the student his concept of his role as a physician, his own motivation to the study and practice of medicine, and his attitudes toward those human problems he meets daily but which ineptly handled could seriously reduce his effectiveness in the practice of medicine. The projective tests provide a measure of student growth in the perceptive understanding of human interrelations which is, of course, not reached by the usual academic examinations. These techniques should also be considered for use as a measure of the quality of teaching in this area.

The seminar is most effective when student-oriented rather than fact-oriented. Such discussions provide an opportunity to sensitize the instructor to the type of growth taking place in each student, as well as an opportunity for a corrective emotional experience for the student. It became apparent in seminar discussions that the changing of attitudes requires both realistic experience in human problems which are troublesome to the student and a suitable atmosphere

in which underlying biases can be aired. In this way the students were able to resolve personal issues arising from their experiences as family physicians.

It also was apparent that as the students grew more comfortable with their patients they became more effective in utilizing their medical skills. Thus in modern medical education, where technical competence and human relationships are so closely interwoven, it becomes important that constructive humanistic attitudes should develop simultaneously with scientific knowledge.

Summary

The following conclusions are made not only on the basis of the intensive study of this admittedly limited sample but also on the investigators' extrapolation of the data.

1. Projective techniques can be adapted to measure basic attitudinal changes and to evaluate student growth in the interpersonal area.

2. The student-oriented seminar provides not only a sound learning situation but also an opportunity to study the processes by which attitudes change.

3. Utilization of technical skills appears to be optimal when the student becomes most comfortable in his interpersonal relations.

4. Dynamic teaching techniques which allow for optimal growth in interpersonal relations should be practiced more extensively in medical education.

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Editorials and Comments

Student Loan Funds Going Uncalled For

THE ROTARY CLUB of Englewood, N. J., recently reported that its $11,500 loan fund for college students has not received a single application for the past three years. Thirty other New Jersey Rotary Clubs report a similar experience. That this is a general phenomenon is attested to by many medical college deans whose student loan funds are currently being very little called upon.

One reason for this unprecedented situation may well be the general prosperity of the period and the fact that more parents than ever before are in position to finance their son's or daughter's education. An even more important reason, however, may be the one pointed out by William H. Sorter, chairman of the Englewood Rotary Club fund. He states[1] "There are so many sources of scholarship money, including the government and the universities, and youngsters are so accustomed to getting things for nothing that none seems to be interested in scholarship loans."

It is indeed a peculiar phenomenon that while in this last 15 years our citizens as a whole have been willing to increase their mortgage indebtedness for their homes from $17.3 billion to $82.1 billion, and their installment debt, mostly for household appliances and cars, from $5.5 billion to $24.9 billion,[2] students have become progressively less willing to borrow to obtain the education which would almost certainly increase the earning capacity of their later years.

This situation should certainly give pause to those inclined to rush to the relief of that 50 per cent of high school graduates who are said to have the mental ability to go on to college but fail to do so "because of lack of funds."

If this lack is only a lack of *free funds* (scholarships) and the student does not have enough faith in himself and enough respect for what a college education can do for him, to lead him to apply for a student loan, is it not an open question if he deserves a higher education?—D.F.S.

1. Editorial in New York *Daily News*, November 22, 1955.
2. "A Hard Look at Consumer Credit," *LIFE*, November 21, 1955.

U.S. Medical Students Abroad

THE NUMBER of U. S. students studying medicine abroad has long been a matter of conjecture. It is a matter of great interest therefore that we now have for the first time a factual report from the Institute of International Education based upon its 1954-55 Survey of United States Citizens Studying Abroad.[1]

Perhaps the most surprising figure is the total, revealing that there were in 1954-55 1,718 U. S. students studying medicine in 25 foreign countries. This represents the equivalent of more than four, 100-to-the-

class medical schools. This figure, incidentally, is approximately 5 per cent of the total of 35,560 students in all our U. S. medical schools.

The countries with the largest numbers of U. S. medical students were Switzerland with 490, Italy with 342, Canada with 332, Netherlands with 125, Belgium with 103, Germany with 78, United Kingdom with 58, Spain with 43, Ireland with 35 and France with 30.

Though Europe drew 1,344 of these students the others were widely scattered, Canada having 332, Oceania 13, the Caribbean 9, the Near and Middle East 6, the Far East 4, Mexico 4, South America 3, and Africa 3.

It is quite surprising to find 13 U. S. students studying medicine in Australia, 9 in Dominican Republic, 4 in Mexico, 3 in Chile, 2 in Union of South Africa, and 1 in each of the following countries: Uganda, Philippine Islands, Japan, India and Hong Kong.

The 1,718 medical students make up over 20 per cent of the total of 8,219 U. S. students found studying abroad in the various fields of interest. Liberal arts students totalled 1,973, as compared with 1,718 for medicine, 764 for theology, 753 for social sciences and 477 for creative arts.

This report is an important one in that it definitely points up the fact that relatively large numbers of U. S. students are now engaged in procuring a medical education in a wide variety of foreign medical schools, many of which have standards quite diverse from those maintained in our 81 U. S. medical schools. The majority of these students will eventually be seeking the approval of our State Boards of Medical Examiners to be admitted to licensing examinations. Is the machinery currently available adequate for the fair and orderly processing of the applications of these many foreign-trained, American-born physicians? The answer is no. Some more effective screening device than is now in use is urgently needed.—D.F.S.

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1. "United States Students Abroad," A Report on the Results of the 1954-55 Survey of U. S. Citizens Studying Abroad. Institute of International Education, 1 East 67th St., New York, N. Y.

Commonwealth Fund Makes Especially Significant Grants

IN A PRESS RELEASE dated Monday November 28, 1955 the Commonwealth Fund announced the award of gifts totaling $7,150,000 to 10 medical schools. The medical schools receiving the grants were: University of Chicago $500,000, Columbia University $750,000, Cornell University $750,000, Emory University $600,000, Harvard University $1,000,000, New York University $750,000, University of Southern California $300,000, Tulane University $750,000, Western Reserve University $1,000,000 and Yale University $750,000.

These gifts have been made from the capital of the Fund and are in addition to the $2,000,000 already granted in 1954-55 to medical education from the Fund's recurring income. It is of some significance to the medical schools of the country that "the urgency of the present need led the Fund to make these special grants." It is equally significant that the hope is expressed "that the Fund's action will stimulate similar unrestricted giving from other sources" and that the "Fund is continuing the study of other medical schools in line with this announced policy

[of viewing the current needs of medical schools as urgent enough to justify the use of capital funds in meeting those needs]."

These grants are without strings attached and "the recipient universities have been informed that they may use them as they deem wise to strengthen their medical education programs in the next few years." It is expected that a different need may well be met in each of the schools receiving these special grants. In the November 28, 1955 *New York Times,* Dean Vernon Lippard of Yale is quoted as viewing these grants as "a recognition of the fact that the great advances in medical sciences are dependent upon basic support of the institution where the scientists are developed" and Dean George Packer Berry of Harvard is quoted as stating that, "This grant of unrestricted funds points the way to a cure for an academic ill which has beset all privately endowed medical schools —that of projectitis."

Some inkling as to why these particular schools were selected to be the first of those to receive these special gifts is to be gained from the first sentence of the Fund's release which reads as follows: "The Commonwealth Fund, *convinced of the compelling need for medical schools to clarify their educational objectives in the postwar world and to help them to institute or to maintain creative programs in medical education,* announced today the award of $7,150,000 drawn from its capital funds." It is of more than passing interest that all of the 10 schools receiving grants are associated with privately supported universities and all have been for some time engaged in critically evaluating their teaching program and making experimental changes in its design.

The Commonwealth Fund was established in 1918 by Mrs. Anna Harkness, the widow of Stephen V. Harkness who was a partner of John D. Rockefeller in the development of the Standard Oil Company. Its assets were reported as $81 million in 1951, as nearly $106 million in September 1955. In recent years the Fund's interests have been largely in the health field particularly in medical education, medical research and community health.

NEWS DIGEST

Prior Reserve Participation

Seniors in approved American medical schools planning to enter the Medical Corps, Army Reserve after graduation next June can begin earning reserve credits at once if they accept their commissions this winter.

These application forms concern participation in the Armed Forces Reserve Medical Officer Commissioning and Residency Consideration Program. Under this program, the medical senior may combine his military obligation and his intern and residency training.

Since processing of commissions in the Medical Corps, Army Reserve, requires a minimum of two months and in some instances, longer, it is possible that the senior who waits too long to file his acceptance of an appointment may have to serve on enlisted status until his commission papers are processed.

Further information may be obtained from the Office of the Surgeon General, Technical Liaison Office, Washington 25, D. C.

General Practice Meeting

More than 5,000 of the nation's family doctors are expected to attend the Eighth Annual American Academy of General Practice Scientific Assembly, March 19-22, in Washington, D. C.

During the four-day scientific meeting, the doctors will hear 26 speakers, and be able to view more than 60 scientific and 250 technical exhibits. Highlights of the program include two live clinics, a symposium on obstetrics and an address by Surgeon Gen. Leonard Scheele. Special tours through the National Institutes of Health, Bethesda, Md., have been arranged.

Article on Dr. Moore

Dr. Robert A. Moore, vice chancellor of the Schools of the Health Professions, University of Pittsburgh, and 1955-56 president of the Association of American Medical Colleges, was the subject of an article which appeared recently in *Medicine in the News*, the newly redesigned monthly publication of the Schering Corp. The magazine, which has specialized in summaries of articles on medical subjects in the lay press, has just been extended to cover professional news as well.

"What Nursing Means to You"

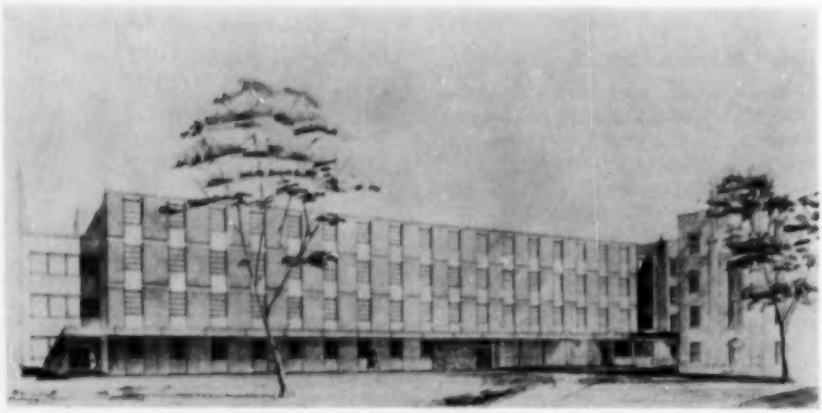
A new pamphlet "What Nursing Means to You" has been published by the Public Affairs Committee. This booklet explains why nursing service is sometimes not available, tells what the profession is doing to meet some of the problems it faces, and suggests what interested groups and individuals can do to help make sure that the nursing needs of the people are adequately met. Copies of the pamphlet may be ordered at 25¢ each from the American Nurses' Association, 2 Park Avenue, New York 16, N. Y.

Second Community Health Week

Under the slogan "Let's Do More About Health" the second nationwide community health week, sponsored by the United States Junior Chamber of Commerce with the cooperation of the National Health Council will be held March 18-24, 1956.

Kits with suggested projects will be distributed by the Junior Chamber of Commerce from its Tulsa, Oklahoma headquarters to chapters requesting them.

College Briefs



THIS ARCHITECT'S DRAWING shows how the front wing of the State University of Iowa's $1½ million medical research center will appear when completed next year. The structure will be designed in the shape of a "T" to connect the medical laboratories building on the left with the university's general hospital on the right.

Buffalo

The university has announced the receipt of a $90,000 grant from the Harry Dent Family Foundation, Inc., for the establishment of a professorship in clinical research in cardiovascular diseases.

The grant will be applied over a five-year period as follows: $12,000 each year for the professorship and $6,000 each year to cover additional expenses in conjunction with the research. The chair will be known as the Harry M. Dent professorship of clinical research in cardiovascular diseases. Mr. Dent was the founder of the Durez Plastics Company, now owned and operated by the Hooker Electrochemical Corp.

Cincinnati

Dr. RICHARD W. VILTER, associate professor and assistant director of the department of internal medicine, made a recent trip to Guatemala and Panama to study anemias associated with chronic nutritional deficiency disease. The visit was made at the request of the Pan American Sanitary Bureau, the regional office of the World Health Organization.

Dr. Vilter also studied kwashiorkor, a severe protein deficiency in children.

Florida

DOROTHY M. SMITH, assistant director in nursing at Hartford (Conn.) Hospital School of Nursing, has been appointed dean of the college of nursing at the University of Florida. Miss Smith will join the staff at J. Hillis Miller Health Center February 1, 1956. The college of nursing will open in September 1956.

Georgia

Dr. JOHN R. FAIR has been appointed assistant professor of surgery and chief of ophthalmology. He was formerly assistant director of the ocular research unit, Walter Reed

Army Medical Center, and chief of the Army's 98th General hospital in Germany.

Maryland

The University of Maryland will formally celebrate its centennial and sesquicentennial anniversaries beginning March 6, 1956 and concluding with commencement in June 1957.

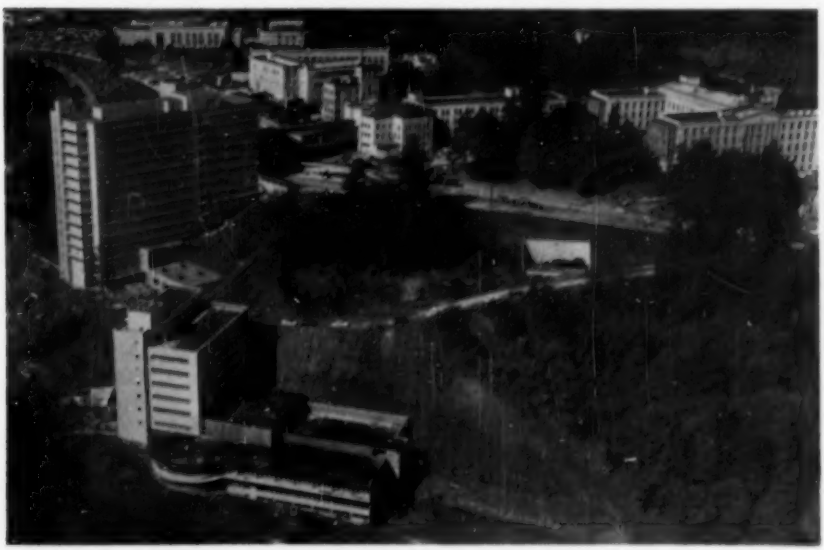
The centennial will mark the 100th year of the Maryland College of Agriculture, established in 1856. The sesquicentennial observes the establishment of the College of Medicine in 1807. Both colleges formed the nucleus of the University of Maryland.

Dr. ERNEST CORY, professor and head of the department of entomology, has been named chairman of the Centennial and Sesquicentennial Committee to guide the 15-month university-wide celebration. In addition to major observances, each college and professional school will participate with individual projects, such as professional meetings, exhibits and other activities.

Northwestern

Public Health Service grants totaling more than $198,000 were awarded to 20 faculty members at the medical school.

Largest grants were for the study of heart disease, kidney disease and the nervous system. Dr. WILLIAM B. WARTMAN, professor and chairman of the department of pathology, received $17,500 for the chemical study of cells in heart muscle injured by heart disease. Dr. LESLIE P. AREY, professor and chairman of the department of anatomy, and Dr. RAY S. SNIDER, professor of anatomy, received $17,000 for research of the effects of radioactivity on the nervous system. Dr. DAVID P. EARLE, professor of medicine, received $16,000 for re-



AN AERIAL VIEW of the University of Oregon Medical School campus shows the newly constructed dental school (foreground) and the University Teaching and Research Hospital. Both are scheduled for official openings in 1956.

search on kidney disease and edema.

Other grants for studies on the nervous system went to Dr. LOYAL DAVIS, professor and chairman of surgery, who will investigate the effect of brain lesions on stomach secretions, and to Dr. E. A. ZELLER, professor of biochemistry, who will study the distribution and functions of enzymes in nerves. Dr. Zeller also received a grant to study substances that combat tuberculosis.

Hormones of the adrenal glands will be studied by Dr. MORRIS A. LIPTON, assistant professor of medicine, and the effect of stress on allergy will be studied by Dr. SAMUEL M. FEINBERG, professor of medicine.

Other grants went to the departments of pathology, surgery, biochemistry, medicine, neurology and psychiatry, bacteriology and physiology.

The university also announced that Dr DAVID W. CUGELL has been appointed to direct new research laboratories for the study of diseases of the lungs, heart, kidneys and blood vessels.

Dr. Cugell was formerly director of the pulmonary physiology laboratory at the Thorndike Memorial laboratory of the Boston City hospital, and was a research fellow of the American Heart Association in medicine at Harvard Medical School. The laboratories will expand the research and teaching facilities of the Florsheim Cardiac Clinic, established in 1938.

North Dakota

A total of $54,106 in new grants for research and teaching has been received by the school of medicine since July 1, 1955. This amount includes $32,911 from the Public Health Service; $15,000 for Dr. H. E. EDERSTROM, department of physiology, for cardiovascular teaching; $5,950 for Dr. R. G. FISCHER, department of bacteriology, for poliomyelitis virus research; $6,500 for Dr. C. J. HAMRE, department of anatomy, for morphogenesis of osseous tissue; $5,461 for EADEN KEITH JR., department of pharmacology, for the effect of hypothalamic lesions on narcotic-induced hyperglycemia.

Other sources were the American Medical Association, the American Heart Association, Bremer Foundation and the Lipotropic Research Fund.

Oklahoma

The school of medicine has received a two-year grant, totaling $25,148, from the National Institutes of Health to study the relationship between stressful life experiences and fat-changes in the blood. The work will be conducted by Dr. STEWART WOLF, head of the department of medicine, and Dr. JAMES F. HAMMARSTEN, associate professor of medicine.

S.U.N.Y.—Syracuse

Dr. HARRY A. FELDMAN has been named chief of a new section of preventive medicine of the department of public health and preventive medicine. The new section is being developed so that the teaching program may be expanded.

Dr. HOWARD LEE BOST has been appointed associate professor of hospital and medical economics in the department of public health and preventive medicine. He will be primarily concerned with research, but will help also in the planning of medical center development in Syracuse and will be available to assist regional hospitals with various studies.

Stanford

The school of medicine will present postgraduate conferences in ophthalmology and otorhinolaryngology from March 19 through March 23. Registration will be limited to 30 physicians who limit their practice to the treatment of diseases of the eye, ear, nose and throat. Information can be obtained from the office of the dean, Stanford University School of Medicine, 2398 Sacramento St., San Francisco 15, California.

THE $28 MILLION Virginia University Medical Center now under construction is shown in this aerial photograph. From the mechanical plant in the foreground the road goes back to the basic sciences building. Still to be started is the teaching hospital and clinic, plans for which are nearly completed. Medical students entering in 1957 will be the first to receive the M.D. degree from this new center.

Tennessee

Dr. DONALD B. ZILVERSMIT, associate professor of physiology at the university's medical units, has been awarded research grants totaling $16,481. A $7,040 grant from the Life Insurance Medical Research Fund will enable him to continue studies of the disturbances of fat metabolism in arteries of animals which have been made arteriosclerotic. A grant of $9,441 from the Public Health Service will permit an extension of studies to other animals which are not susceptible to the disease.

Dr. E. H. STORER, department of surgery, has been awarded research grants totaling $10,200. A $2,800 grant from Abbott Laboratories will be used to evaluate the clinical applications of the Zilversmit intravenous fat emulsion. A $7,400 grant from the Public Health Service will support the study of gastric secretory physiology in the experimental animal.

The Tennessee State Medical Association has announced a change in its postgraduate instruction methods. A symposium-type program will be substituted for its circuit rider course, under which a full-time specialist has traveled over the state presenting lectures in a medical specialty. Dr. FRANK L. ROBERTS, associate dean of the college of medicine, is chairman of the symposium committee. The new program will be on a two-year basis, and meetings will be held in 10 cities of the state.

A new $878,000 administration-postgraduate building has been added to the Memphis Medical center, and a $900,000 expansion announced. The new building provides an additional 35,000 sq. ft. of floor space for the university. The expansion program includes adding a seventh and eighth floor to the pathology building; a fifth floor to the pharmacy building and a modernization of the C.P.J. Mooney Memorial library.

Audiovisual News

Commercial X-ray Motion Picture Cameras

From Rochester, N. Y. comes the announcement that commercial units for cinefluorography will soon be available from General Electric Co., X-ray Department, of Milwaukee, Wis. This is equipment designed by Dr. James S. Watson and Sydney A. Weinberg of the University of Rochester Medical Center.

The equipment has been designed for use with conventional X-ray equipment, and can be used for taking pictures with the patient seated, standing or lying down. The picture-taking area is 15" x 15". Both 16 mm. or 35 mm. film can be used at a speed range of 4 to 30 frames per second. Key features of the camera is a F/.71 lens, and an electronic triggering mechanism which turns the X-rays on and off up to 30 times a second in synchronization with the motion picture camera, thus minimizing the X-ray dosage.

Under the direction of Dr. George H. Ramsey, the Rochester group has made numerous clinical X-ray motion pictures with this type of equipment.

Pfizer AV Fellowship

Dr. Gene V. Williams of the University of Kansas Medical Center has been awarded the first Pfizer Fellowship in Medical Audiovisual Education. Dr. Williams is a first year resident in surgery and the fellowship is planned to run conjointly with his surgical residency and his specialty of plastic surgery for five years.

Dr. GENE WILLIAMS, winner of the first Pfizer Fellowship in Medical AV Education.

The fellowship will be jointly administered by the department of surgery and audiovisual education and will consist principally of specific AV projects in surgery: films, exhibits, television and other such efforts as will be planned jointly by the respective department heads, Dr. David W. Robinson and Dr. David S. Ruhe.

Dr. Williams' fellowship was awarded through Thomas J. Winn, vice president of Chas. Pfizer & Co., Inc., and Dr. Leo L. Leveridge, director of Pfizer's Medical Film Department, and a former Fellow of the Medical Audio-Visual Institute.

New Coated Acetate

Acetate is being used more frequently for a variety of purposes ranging from simple Vu-Graph or overhead projector transparencies to overlays for television charts. A clear acetate under the trade name of "Kleerkote" will take ink, water colors and poster paints without the "crawling" and chipping characteristics of ordinary acetate. A Bourges material, it is available from Bourges, Inc., 106 Fifth Ave., New York 11, or from most local art stores.

ACS Grants TV Screens

The American Cancer Society has granted the University of Kansas Medical Center and the University of Chicago School of Medicine a large screen television projector each. The screens are 4½' by 6' and are of the group purchased by the society when it operated its experimental closed

circuit teaching program two years ago. Grants were made to these institutions because their existing facilities would accommodate this larger screen, and, therefore, a larger audience. It is expected that these receivers will supplement existing professional education program facilities.

Cardio-Views

The American Heart Association now has available 3-dimensional color views of the latex heart models previously developed by them. There are three different views of each latex model providing a total of 36 views. The pair of transparencies for each view are mounted in a cardboard mount for use in a small viewer. In addition to the transparencies each mount has a silhouette of the view plus a brief description of the view (see cut).

The 36 views and a small hand viewer are packaged in a cardboard box about the size of a 4-inch cube. In design and price they are particularly adaptable to individual or medical library ownership for individual reference or study. Available from the American Heart Association, 44 East 23rd St., New York 10. Price $10.

Business-Sponsored Films

The Association of National Advertisers, Inc. has released a 16-page booklet of the above title offering 22 criteria for the production of films that meet the curricular needs of the nation's schools. The book was prepared by a group of leading advertisers and has the approval of two committees of the Department of Audio-Visual Instruction of the National Education Association.

The criteria, intended primarily for use by business firms in preproduction planning, cover four main categories, curriculum approaches, educational subject matter, produc-

American Heart Association's "Cardio-Views"

tion requirements and distribution policies. The booklet was produced in an effort to help the sponsor produce pictures which are more acceptable to educators.

Pharmaceutical houses or other business firms may buy the book directly from the A.N.A. at 285 Madison Ave., New York 17; price $2 ($1 for members). Teachers or educational institutions may order through the Department of Audio-Visual Instruction, N.E.A., 1201 Sixteenth St. N.W., Washington; price $1.

Bellevue TV Program

A four-hour medical television program, emanating from the new surgical suite of Bellevue hospital, New York City, was presented by the New York State Society of Anesthesiologist on December 7, 1955 as part of their annual Postgraduate Assembly.

Ten presentations by cooperating university and hospital groups included Dr. E. A. Rovenstine, Dr. Charles Burstein, Dr. William S. Howland, Dr. Joseph Artusio, Dr. Louis Orkin and others.

Large screen viewing facilities were set up in the grand ballroom of the Hotel New Yorker. The program, produced and directed by the Medical Television Foundation, was supported by a grant from E. R. Squibb. Assisting groups were the New York University Medical Audio-Visual Department, the Office of Radio-TV, the Dumont Television Network, and the New York City Department of Hospitals.

ACS Film Awards and Citations

"Fractures of the Femur about the Hip Joint" received first award as the best teaching film shown at the 41st Annual Clinical Congress of the American College of Surgeons. This was one of a total of 131 films shown during the five-day congress. This orthopedic teaching film is one of a series on the principles of fracture reduction being produced for the Veterans Administration by Churchill-Wexler Film Productions under the authorship of Dr. William A. Larmon of Chicago.

Second award went to "Resection of Abdominal Aorta and Replacement with Graft" produced by the Alton Ochsner Medical Foundation under the authorship of Dr. H. Reichart Kahle of New Orleans. Third award was given "Action of the Human Heart Valves" by Dr. Karl P. Klassen and Dr. Charles V. Meckstroth of Columbus.

A unit citation was given to the 29 cine-clinic films for general photographic quality and visual organization.

Citations were also given to the following films shown at the Motion Picture Exhibition and the Motion Picture Symposium on New or Unusual Problems in Surgery:

"Radical Neck Dissection through Transverse Incisions" by Dr. William F. MacFee of New York, and produced by Sturgis-Grant Productions, Inc.; "Gastrointestinal Polyps Associated with Oral Pigmentations—Peutz; Jeghers Syndrome" by Dr. John M. Waugh of Rochester, Minn., and produced by the Mayo Clinic Photography Department; "Extra-Uterine Pregnancy Delivered at Term" by Dr. Milton T. McCall of New Orleans; and "Surgical Treatment of Dissecting Aneurysm of the Aorta" by Dr. Michael E. DeBakey of Houston.

N I H TV Film Report

A film report of experimental studies of how television can be used in the biological research environment is now available. Entitled "Electronic Image Processing," the film is virtually a series of kinescope recordings of what was seen by using TV in a variety of situations where the television cameras were used to pick up and report or communicate data in the biological sciences.

The study was jointly carried out by the National Institutes of Health and the Navy Special Devices Center. A total of 25 experiments or situations were televised to help determine the effectiveness of TV. Motion

pictures were taken directly from the television receivers. This motion picture record has been edited and some explanatory film material added to form the present report. This film report may be procured through arrangements with the Education Director, National Institutes of Health, Bethesda, Md.

College AV Centers Booklet

The Department of Audio-Visual Instruction of the National Education Association has just released a booklet entitled "Audio-Visual Centers in Colleges and Universities." The contents are covered in four main headings: The nature of the audiovisual center; housing basic services; special campus AV features and achieving goals. Although the booklet contains some information which is irrelevant to medical college AV centers it does suggest ways and means of handling the medical college environment. It is illustrated and contains a reference directory of manufacturers and distributors.

This is the fourth publication in the series entitled "Planning Schools for the Use of Audio-Visual Materials." The first three are entitled: No. 1, Classrooms; No. 2, Auditoriums and No. 3, Instructional Materials Center. Each is priced at $1 and available from the National Education Association 1201 Sixteenth St. N.W., Washington 6, D.C.

Preparing 16 mm. Film

Standard procedures in the preparation of preprint 16 mm. film material have been promulgated and recommended by the Association of Cinema Laboratories. The full text of the association's recommendations with accompanying charts is contained in *Film World and AV World News Magazine, Vol. XI*, No. 10, October 1955 (6327 Santa Monica Blvd., Hollywood 38; 35¢ per copy). The recommendations are clearly stated and illustrated under three main headings: effects, leaders and A & B rolls.

Film Library Additions

Since the completion of the 1955 Fall Catalog the following films have been added to the MAVI library and are now available for rental.

All My Babies..... $10

55 min., sd., b&w., 16 mm., 1953.

Film follows a midwife, working under both favorable and unfavorable circumstances. A complete delivery is shown, with pre-and post-delivery procedures shown in detail. The film is distributed in three reels, each of which ends at a logical discussion point.

Sponsors: Georgia State Department of Public Health; *Producers:* George C. Stoney for the Medical Audio-Visual Institute of the Association of American Medical Colleges.

The Invader..... $8

40 min., sd., b&w., 16 mm., 1955.

The story of man's efforts since the 15th century to subdue syphilis. Shows the step-by-step development of medical knowledge, and the changes in public attitude toward the disease. The film tells its story through the available documents of each age, and is dramatized by means of contemporary woodcuts, engravings, paintings and drawings of famous artists. The later story is enriched with historic photographs of pioneers like Ehrlich and Hata, and motion picture records of the work of Fleming, Mahoney and others.

Sponsors: Georgia State Department of Public Health; *Producers:* George C. Stoney for the Center for Mass Communication of Columbia University Press, New York.

Mosquito Stages of Plasmodium Falciparum $2

10 min., sd., b&w., 16 mm., 1955.

By means of cinemacrography, cinemicrography and graphics, shows (1) The female of Anopheles quadrimaculatus obtaining a blood meal and the action of the mosquito mouth parts within tissues; (2) Gametocytes, gamete formation and fertilization; (3) The development of the ookinete, oocyst and sporozoites; (4) Transfer of sporozoites to the salivary glands and their inoculation into the tissues of the host when the infected mosquito feeds. (This is a companion to *Erythrocytic Stages of Plasmodium Vivax.*)

Producers: Communicable Disease Cen-

ter, and the Laboratory of Tropical Diseases of the U. S. Public Health Service; *Authors:* Malcolm S. Ferguson, Ph.D., Gordon B. Wolcott, Ph.D., and Martin D. Young, Sc.D.

Movements of the Cardiac Valves and Origin of the Heart Sounds..... $7

20 min., sd., color, 16 mm., 1955.

The actions of the cardiac, aortic and pulmonic valves of the isolated perfused heart of the dog are shown in normal and slow motion. Simultaneous ECG and phonocardiographic records accompany the activities of the heart and valves. The first and second sounds of the heart are presented. Excision of the valve leaflets and insertion of water-filled balloons silence the first heart sound, and immobilizing the aortic valves eliminates the second heart sound. Comments and brief discussions, in the form of printed substitutes, accompany the various aspects of the film.

Authors: H. L. Smith, M.D., H. E. Essex, Ph.D., and E. J. Baldes, Ph.D.; *Producers:* Mayo Clinic, Rochester, Minn.

Nephrosis in Children..... $2

18 min., sd., color, 16 mm., 1954.

This film assists the practitioner in recognizing childhood nephrosis during its insidious onset, discusses diagnostic features, clinical and laboratory findings, course of the disease, major principles of management, complications and prognosis.

Producers: Campus Film Producers for Pfizer Laboratories, Division, Chas. Pfizer & Co., Inc.; *Medical Supervisor:* Robert E. Cooke, M.D.; *Script:* Ralph Schoolman and Leo L. Leveridge, M.D.

Summaries of Film Reviews

The Dissection of a Mosquito for Malaria Parasites

10 min., sd., color, 16 mm., 1954.

An *Anopheles atroparvus* female feeds while the narrator introduces the subject of malaria. Animation of mosquito anatomy and intramosquito parasite development is contrasted with live oocysts and sporozoites. Mosquito dissection makes clear the techniques of squeezing out of the salivary glands and pulling out of the gut. Sporozoites and oocyst counts are demonstrated.

This brief and explicit film nicely demonstrates the principal components of the intramosquito phases of the malaria parasite life cycle along with the method of Anopheles dissection. It is therefore both a laboratory exercise and a source of fundamental visual information in parasitology. Except for the spurious animation of the sporozoite circulation in the mosquito (it must be no more expensive to do it accurately) and the dissociation of words and pictures at beginning and end, the film is direct, clear and well made.

So clear an exposition of a method and facts concerning malaria will be very useful at university and medical classroom levels, for all students of the medical (and biological) sciences, including entomology. (Note that there is also an excellent film "Mosquito Stages of Plasmodium Falciparum," available from the Communicable Disease Center, Public Health Service, Atlanta, Ga.) D.S.R. with K.U.M.C. Panel, November 1955.

Audience: Biological science students.

Production Data: Sponsor: Burroughs-Wellcome Ltd., Great Britain. **Producers:** Wellcome Film Unit.
Distribution: British Information Services, 30 Rockefeller Plaza, New York 20, N. Y., and Burroughs-Wellcome, Ltd., Tuckahoe, N. Y.

Congenital Anomalies of the Larynx

15 min., si., color, 16 mm., 1954.

This film shows a normal infant larynx, followed by 15 collected cases of congenital laryngeal malformations. Pathology shown includes: curled epiglottis, laryngeal stridor, right cord paraylsis after birth injury, bilateral cord paralysis, cyst of the right laryngeal ventricle, cyst of the left arytenoid, fusion of the anterior half of the cords, five webs of the larynx, two cases of subglottic stenosis, and complete atresia.

This case atlas film collects via direct laryngoscopy a remarkable range of lesions handsomely recorded by a pioneer of endoscopic cinematography. Titles are admirably brief. Color is on the whole excellent.

For residents in otolaryngology this parade of lesions is a living museum worth much study. The film should be owned by ENT departments for teaching and "assigned viewing." D.S.R. with K.U.M.C. Panel, 1955.

Audience: Medical students, interns and residents in otolaryngology.

Production Data: Authors: Paul H. Holinger, M.D., Kenneth C. Johnston, M.D., and Filmore Schiller, M.D., Department of Otolaryngology, University of Illinois College of Medicine, Chicago.
Distribution: The Jacques Holinger Memorial Fund, 700 North Michigan Ave., Chicago, Ill., **Rental:** $15; **Sale:** $100.

Book Reviews

Human Physiology, 4th edition

F. R. Winton and **L. E. Bayliss.** Little Brown and Company, Boston, 1955. 616 pp., with index.

This well-known text book, prepared in collaboration with a group of physiologists and biochemists in the British universities, is now offered in a fourth edition. The organization follows much the same form as that previously used. Three quarters of the illustrations from the third edition have been retained. The rest have been replaced with new figures, some specially prepared for the book. The text has undergone moderate revision, with new material appearing especially in the discussions of neuromuscular physiology, and of the central nervous system. Modern work on functional localization and projection in the brain is included.

As in the past the text is well and clearly written. It derives its material in good part from the rich background of experience developed in British laboratories over the last half century by a group of distinguished teachers and investigators. The book deserves the continued attention of teachers of physiology who instruct at the college level. It will also be of service in the professional schools when there is need for a relatively simple and clear account to aid students who have had no previous experience in the subject.

William R. Amberson, *Maryland*

Management of Disorders of the Autonomic Nervous System

Louis T. Palumbo, M.D. The Year Book Publishers, Inc. Chicago, 1955, 186 pp. with index. $5.

This general practice manual fulfills a timely need in presenting practical information in a simple and concise manner for the physician. In recent years the treatment of the many disorders of the autonomic nervous system has come to include numerous new medical and surgical measures. Undoubtedly, the readers of this book will gain information that will help them to improve their management of this group of diseases.

One purpose of a manual is brevity and since the subject in this case is extensive, certain disorders which at best are difficult to manage may be covered superficially. Perhaps insufficient space was devoted to the many so-called functional manifestations due to psychic factors which are often mediated through the automatic nervous system. One aspect of the physician's management of these common complaints is an explanation to the patient of their mechanism. This book provides an excellent review of the anatomy, physiology and pharmacology of the autonomic nervous system which is useful information in the management of both functional and organic disorders associated with this system. Dr. Palumbo has illustrated well the sweating test which has increased the knowledge of the extent and completeness of sympathetic denervation procedures.

The development of various types of sympathectomy has been a significant contribution to the management of several vascular and other disorders. Although the author in general has attempted to place the indications and value of sympathectomy in their proper place with other therapy for a variety of disorders, the reader may feel this has not always been accomplished. The use of sympathectomy should still be considered in the era of clinical investigation in cases of asthma, certain cases of decompensated heart disease, chronic pancreatitis, ulcerative colitis, regional enteritis and biliary dyskinesia.

Glenn W. Irwin, *Indiana*

Diagnosis of Congenital Heart Disease

Sven R. Kjellberg; Edgar Mannheimer; Ulf Rudhe and **Bengt Jonsson.** The Yearbook Publishers, Inc., Chicago, 1955. 649 pp. with index.

This book reports diagnostic studies on 396 patients with congenital heart disease over a three-year period (1951-54), most of whom had been referred to the Pediatric Clinic in Stockholm. As such it is an excellent reference text for groups investigating congenital heart disease.

Its value lies in that it sets forth experiences with techniques somewhat different from those used by American

clinicians. In particular, these Swedish physicians have utilized bi-plane angiocardiography at speeds up to 12 per second which are timed in the cardiac cycle by a marker on the electrocardiogram. In "selective angiocardiography," used in 331 of their patients, they have forced the contrast media at high pressure through a cardiac catheter with the tip near the anomaly. Only 13 angiocardiographic studies were done through the arm or leg vein injection site commonly used in this country.

The selection of cases studied was not representative of all varieties of congenital heart disease, but reflected the artificial selection of referred cases. Classification is based on the predominant anatomical abnormality found rather than on the basis of shunts and their directions. Brief case reports are included with studies by electrokymography, apex cardiography, phonocardiography as well as by angiocardiography and catheterization. I found the numerous X-ray plates fascinating in their clear delineation of anomalies. For example, a sphincter mechanism of the venae cavae is well demonstrated. Stenotic valves and infundibula are shown so well that this method has important

(and previously recognized) surgical applications.

Catheterization details are presented in appropriate discussion. Spectrophotometric blood gas analyses were made rather than Van Slyke analyses. Shunt values are not presented in liters but only as the difference between the oxygen content of samples proximal and distal to the shunt, an expression which is probably more accurate because it makes fewer assumptions. Dye dilution curves were not made because the authors claim they were "superfluous since the introduction of selective angiocardiography."

References are filed at the end of the book and the majority of the 387 citations are in the English language. Apparently the volume was published in Swedish, but the manuscript has been excellently translated by Erica Odelberg. There are very few errors for a first edition.

Robert L. Grissom, *Nebraska*

Transplantation of Tissues, Vol. I

Lyndon A. Peer, M.D. The Williams & Wilkins Co., Baltimore, 1955. 421 pp. with index. $13.50

Dr. Peer deals here with a seldom understood and little appreciated phase of basic surgery. It is nonetheless a phase pertinent to the success of every surgical procedure. His studies of the micro-anatomy, physiology and behavior of the individual cell, carry us on to a new concept of the existing environment and reactions within the surgical wound. These concepts must be recognized and further pursued by the progressing surgeon.

The initial portion of the book deals with cellular origin, growth and aging on a histologic level, thereby setting the stage for his presentations of specific tissue grafting in the subsequent chapters. There is full consideration given to experimental, auto-, homo- and heterografting, as well as the organization and presentation of all published data pertaining to same, and the clinical application for each. This material is contained in separate sections dealing with cartilage, bone, fascia, tendon and muscle. The author has undertaken a meticulous compilation of studies made in the field of tissue transplantation and interpreted them very aptly in their clinical usage.

Dr. Peer is credited with being the first to use and to popularize diced cartilage grafts which are ingenious, malle-

able sources of replacement tissue that work out well in the repair of many structural and plastic defects of the human body. It is in this field where the most substantial surgical progress has been made, and is yet to be accomplished. The successful cardiovascular grafting operations of today, for example, were unheard of several years back, as were many other operations in the fields of plastic, bone, chest and general surgery. These procedures for the most part have only been possible because of the exhaustive studies and valuable information obtained through countless tissue experiments and observations.

Dr. Peer has made a noteworthy contribution to this type of surgical progress, and no doubt will encourage many others by his fine publication.

John B. Condon, *Loyola*

A Short History of Medicine

Edwin H. Ackerknecht, M.D. The Ronald Press Company, New York 10, N. Y., 1955, 258 pp. with index—$4.50

This book offers a panoramic survey of the entire history of the healing art, beginning with traces of disease and therapeutic activity in fossils of prehistoric days and winding up with a sketch of medical trends of this century.

A description of the subject matter in terms of main currents amounts to an outline of universal history oriented toward the evolution of science, and of course necessitates a great deal of rather arbitrary selection. The author has succeeded admirably in following a middle course between general outlines on one hand, and the itemizing of individual accomplishments on the other.

Seven chapters are devoted to prehistoric medicine and the medicine of the ancient civilizations. Two chapters covering the middle ages and renaissance are followed by 10 tracing the growth of science and its application to medicine through the first half of the 20th century.

In this reviewer's opinion, the book is an excellent introduction to the history of medicine. Despite its brevity and the necessary deemphasis of single contributions and the colorful individuals who made them, the genius of the men involved and the daring originality of their investigations shows through clearly. The documentation is excellent, as are the profuse references. The volume is highly recommended for students and others who heretofore have lacked a short, concise introduction to the history of medicine.—J. R. Snavely, *Mississippi*

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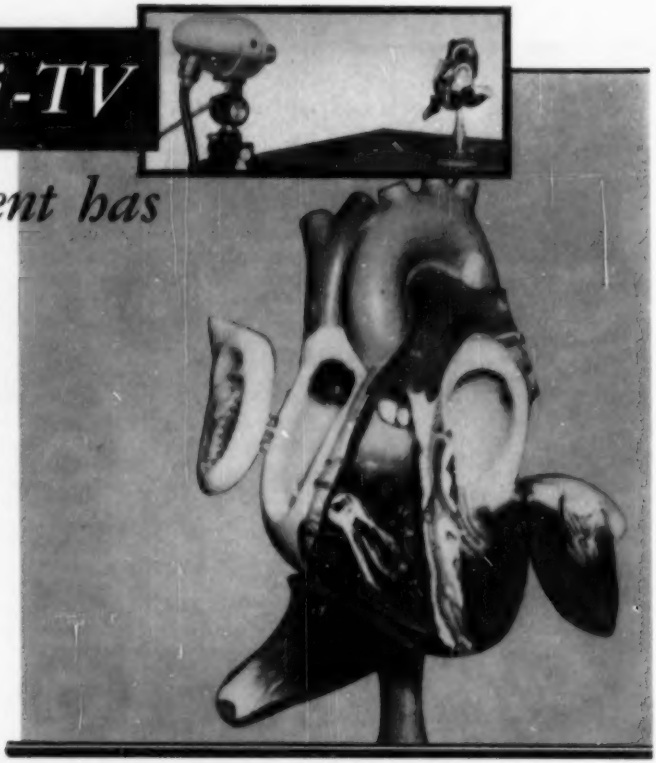

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Personnel Available

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• GERMAN PHYSICIAN AND SURGEON: Educated Frankfurt/Main University, now in practice in Frankfurt/Main. Seeks academic position in United States, also information on residencies or internships. Address: A-176.

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Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 185 N. Wabash Ave., Chicago 1, Ill., not later than the 10th of the month which precedes the month in which the listings will appear.

• RESEARCH ASSOCIATE: in fields of virology, bacteriology or immunology in a medical college. Ph.D. in bacteriology from State University of Iowa. Address: A-177.

• PATHOLOGY-BACTERIOLOGY: Desires teaching and research. Presently director of laboratories and medical examiner in U. S. Overseas Territory (Guam). Research work on tuberculosis and amyotrophic lateral sclerosis. Publications, societies. Ph.D. in microbiology. Teaching experience. Address: A-178.

• ANESTHESIOLOGIST: M.D., Ph.D., bio-chemistry and pharmacology, university trained and experienced. Available and interested in opportunity, preferably East coast, beginning July. Address: A-179.

• MEDICAL WRITER: Woman, B.S., B.J., University of Missouri, 1950. Major in special writing; five years newspaper experience; will have completed 16 credit hours in university school of medicine by August. Membership in Theta Sigma Phi and Kappa Tau Alpha, national honorary journalism fraternities. Available September 1. Address: A-180.

• PHYSIOLOGIST: Ph.D., 33. At present holds teaching and research position in medical school (6 years). Present rank assistant professor. Desires teaching position with research opportunities. Address: A-181.

• MICROBIOLOGISTS 24, Indian, B.Sc. (Microbiology) and B.Sc. (Chemistry) Bombay University. Experience in virus research and laboratory and serological work. Desires to study for Ph.D. in microbiology or bacteriology. Prepared to work on stipend or fellowship under any capacity. Address: A-182.

• BIOCHEMIST: Chemical pathologist, 28, Indian. B.Sc., M.Sc. Bombay with biochemistry, chemistry of food and drugs, first class B.Sc. (tech.) Research experience in enzymology, sterols. Taught chemical pathology, hospital biochemist for three years. Desires postgraduate studies in biochemistry or chemical pathology leading to Ph.D. Prepared to work on stipened or fellowship in any capacity. Address: A-183.

• PSYCHIATRIST: 31, male, M.D., B.A. (psycology), seeks part-time teaching position in Philadelphia area. Experience in teaching at graduate and undergraduate level. Dynamic orientation. Address: A-184.

• PHYSIOLOGIST: Ph.D., 28, married. Experience in research and teaching mammalian physiology. Research interest in neurophysiology and comparative physiology. Publications. References. Desires teaching-research position. Address: A-185.

• SURGEON: University trained, certified by general and thoracic boards, early 40's, family. Experienced in applied cardiopulmonary physiology as well as all phases of thoracic and cardiac surgery. Presently director of large teaching unit in East. Publications include basic investigation. Desires relocation, preferably full-time, with opportunity to develop own unit along three lines, service to patients, teaching and investigation. Address: A-186.

• MEDICAL ILLUSTRATOR: Male, single, 27, draft exempt, presently employed full-time in a university medical school and hospital. Desires changes and position with better future. Six years actual experience in scientific and technical illustration for lantern slides and publication. References and samples will be furnished. Address: A-187.

• ANATOMIST—ENDOCRINOLOGIST: Ph.D., 32, family, desires teaching-research post in medical school. Three years experience directing endocrine and pathology sections in pharmaceutical house. Good teacher with experience in the various phases of anatomy. Publications and societies. Will accept administrative responsibilities. Available September 1, 1955. Address: A-188.

• MEDICAL WRITER: 42, honor graduate of University of Illinois medical writing curriculum of the school of journalism. Publications, societies. Desires position as medical writer. Address: John W. Torrance Jr., 1731 E. 72nd St., Chicago 49, Ill.

• PH.D.: Doctorate in zoology-endocrinology major. Have engaged in research in pharmaceutical industry in endocrinology, pharmacology, biochemistry, pathology and toxicology Has served as research assistant at university, and has done pharmaceutical research for the Army. Seeks teaching and research position in medical school. Address: A-189.

• HISTOCHEMIST: For research project in large hospital in the East. Salary dependent on training and experience. Address: A-190.

• HOSPITAL MEDICAL DIRECTOR (administrator): Male, 47, married, M.D.; MPH in hospital administration from Yale. Experience with AMA's Council on Medical Education and Hospitals as member of field staff representing Council and Joint Committee on Accreditation of Hospitals; also assistant director of division of hospitals and graduate education. Seeks administrator position with hospital operating an approved graduate training program for interns and residents. Address: A-191.

• INTERNIST: Male, 39, interested in full or part-time medical school affiliation. Has had three year residency at large midwestern medical school. Presently taking one-year period of training in endocrine and metabolic diseases, involving both clinical and research aspects. Address: A-192.

•MICROBIOLOGIST: Medical, male, Ph.D., 30. Teaching experience in medical bacteriology, parasitology. Present position, assistant professor of microbiology in medical college. Research experience in immunology. Sigma Xi, publications. Desires teaching appointment with research opportunities in a medical school. Address: A-193.

• PATHOLOGIST: 43, male, pre-war foreign graduate. Completing four years residency in pathological anatomy and clinical pathology in July 1956. Trained in large institution with university medical school connection. Working in U. S. hospitals since 1948. Desires permanent position with teaching institution. Address: A-194.

• PEDIATRICIAN: male 46, married. Amer. Board of Pediatrics, masters degree in pathology. Wishes teaching position in medical school or combined teaching, student health position. College teaching experience, 7 years. Address: A-195.

• PARASITOLOGIST—PUBLIC HEALTH: M.Sc., Ph.D., 41, married. Background in medical and zoological parasitology, including medical entomology, in government public health departments, hospitals and university premedical and medical school teaching. Societies, publications. Presently a senior parasitologist in a public health department and research associate in a large eastern university medical school. Desires full-time teaching position in a university with opportunity for basic and clinical research, preferably in association with local hospital laboratories. Address: A-196.

• SURGEON: S.B. and M.D., University of Chicago. Diplomate, general surgery. Three years experience teaching and research. Current rank associate in surgery. Particularly interested in teaching clinical surgery at undergraduate as well as graduate levels. Age 35. Desires full-time permanent academic appointment in clinical surgery. Address: A-199.

• INTERNIST, TEACHER, INVESTIGATOR: Former professor of medicine, qualified internist, member of societies, author, investigator in infectious diseases, much foreign experience, interested in obtaining academic position in clinical medicine with teaching and opportunity for research. Address: A-200.

• ASSOCIATE PROFESSOR OF RADIOLOGY at general hospital and university medical school desires position preferably in East. Credentials furnished on request. Address: A-201.

• GENERAL SURGEON: Age 39, M.D., C. M.; F.R.C.S. (Edin.); F.R.C.S. (Eng.); American Board eligible with teaching experience in anatomy, pathology and surgery desires full or part-time teaching appointment. Will consider any location. Address: A-202.

• MICROBIOLOGIST: Medical, male, Ph.D., 37, married. Experience includes: editorial assistant for scientific journal, industry (chemotherapy and drug resistance), and academic research. Present position research associate in medical school. Research background in antibiotics, drug resistance, chemotherapy, bacterial metabolism, carcinogens, nucleic acids, cytology, and mutations due to irradiation. Well-trained in photography and photomicrography. Desires teaching and/or research. Address: A-203.

• BIOCHEMIST-INTERNIST: Ph.D., M.D., 39, desires position combining research, teaching and clinical work. Chief clinical interests are rheumatology and endocrinology; diplomate of the American Board of Nutrition. Industrial research and teaching experience, publications, broad research background including radioisotope techniques. Address A-204.

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• PEDIATRICIAN: 32, formal training Ped. Neurology (one year) and EEG (one year). Dipl. Am. Board of Pediatrics; member American EEG Society. Veteran. Available July 1, 1956. Address: A-206.

• SOCIAL WORK TEACHER in medical school: Female, married. 8 years teaching experience as faculty member in psychiatric and medical hospitals, wishes position as director of social service and teacher of medical students in the South, Southwest or Southeast. M.A. from U. of Chicago School of Social Service Administration. Available immediately. Address: A-196.

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1. Cass, L. J. and Frederik, W. S.: Malt Soup Extract as a Bowel Content Modifier in Geriatric Constipation. Journal-Lancet, 73:414 (Oct.) 1953.

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